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Ministry of Defence

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NUMBER 76

Computer Weekly International

THURSDAY, SEPTEMBER 8, 1977

Germans set up £1m plant in Ireland

COMPUTER and microelectronics company Lewicki Microelektronik of Ulm, West Germany, which makes hybrid integrated circuits, is to establish a £1 million plant at Tullamore, Irish Republic. Other companies which have plants planned or established in Ireland include Nippon Electric of Japan, DEC, Dataproducts, Amadit and Centronics of the US and Nixdorf Computer of West Germany.

Exports of electronic goods from the Republic increased sixfold between 1973 and 1976 as a result of the generous tax advantages offered by the Irish government to companies establishing manufacturing facilities in the country.



Three US firms in satcom trials

THE provision of a comprehensive internal communications service for large corporations is currently being tested by three US companies in conjunction with Satellite Business Systems, which is part owned by IBM.

The three companies involved in the experiment, called Project Prelude, are space and aeronautical specialists Rockwell, the Texaco oil company, and the stores group Montgomery Ward.

The use of roof-top earth stations will completely isolate users of the satellite from the conventional terrestrial telephone network, which is provided in the US primarily by AT&T.

Rockwell will transmit data between Pittsburgh and Seal Beach, California, Texaco between Harrison, New York and Bellaire, Texas, and stores group Montgomery Ward between

Chicago and Catonsville, Maryland.

The satellite to be used for Project Prelude is the Communications Technology Satellite, jointly owned by NASA and the Canadian government, which is part owned by IBM.

The earth stations used in Project Prelude are being built by communications satellite specialists Comsat, which owns SBS in a joint venture with IBM and Aetna Life.

The SBS satellite will be able to handle traffic at up to 6.3 Megabauds per channel. It will have a power output of 20 watts and a total capacity of 43 Megabauds, multiplexing computer, telephone and image transmissions into a single beam.

Communications controllers at the earth stations will monitor the amount of transmission time needed.

Soviets order Seeccheck

AN important international marketing breakthrough has been achieved by Radifon Computers with the announcement of the first Russian orders for its Seeccheck key-to-disc system.

The first two customers are Moimayassoprom, the organisation that handles meat processing and the Voronezh steel works located 500 Kilometres south east of Moscow.

The equipment being supplied to

them will include a Cyrillic alphabet terminal which has been produced by Radifon specially for its Russian customers. The software for the terminal was developed by Radifon programmers Cheryl Houliard (picture above), and can handle 128 characters for input and output code translation.

Radifon is already a well-established systems supplier in Poland (CWI, January 13) and Czechoslovakia (CWI, June 9).

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Fujitsu gives details of network architecture

DETAILS of Japanese market leader Fujitsu's network architecture have now been released. Called FNA, the architecture has been designed to separate data communication functions from data processing functions within each element of the network, reducing the load on the host mainframes and minimising link and programming costs.

The ISO HDLC data link standard is used, and the X25 packet-switching interface and other recommendations of both ISO and CCITT are incorporated.

Four different communication processors of varying power



NCR makes the grade

THE transformation that NCR has been working on to change from a cash register manufacturer with some computer interests into a fully fledged computer company, is beginning to be acknowledged by the US financial community.

A report from New York stockbrokers Drexel Burnham Lambert is typical of the views now being expressed about the company. There is some doubt as to NCR's ability to consolidate its recovery beyond a recession that observers suggest will hit the US in 1978 but Drexel regards NCR as very promising in the short term.

NCR's Criterion mainframes are compared favourably with similar systems from IBM, and the report forecasts that NCR's new machines, expected to be announced shortly, will include the 8100 for first-time users, costing about \$20,000, and a new top to the Criterion line, the 8500, costing more than \$2 million.

On point-of-sale equipment the report says that NCR is the undisputed leader but points out that these operations are at present unprofitable. However, it believes that at the rate NCR is shipping terminals, 40,000 to 50,000 a year, this section could come into profit this year.

The stockbrokers estimate that computer systems will produce 23% of NCR turnover, \$604 million, in 1977, compared with 16%, \$417 million, for retail terminals, 11%, \$291 million, and 4%, \$98 million, each for general purpose terminals and mechanical equipment.

● Stocks slump on Wall Street — page 38.

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Canadian 'Ombudsmen' solve snags

MEMBERS of the Canadian Information Processing Society have set themselves up as computing "Ombudsmen" on a voluntary basis in Toronto and Vancouver.

The "Ombudsmen" have no legal powers, but so far they have sorted out all problems put

to them by members of the public by talking directly to computer people at the organisations concerned.

Finch said the "Ombudsmen" were working with the Consumers' Association, which received the complaints, had one attempt at solving them, then passed them on.

A team of 14 volunteers are serving as "Ombudsmen" in Toronto, and they deal with about six complaints a month.

He added that the low number of complaints suggested that consumers were operating better than had been thought.

UK 'attractive market' for American manufacturers

US government forecast of sales trends abroad

MARKEt research firms constantly peddle their predictions about the markets for computers in various countries. The US government, however, relies on its own information gathering apparatus to assess and forecast the manufacturing and sales trends abroad. Documents obtained from the US Department of Commerce indicate what US computer manufacturers can expect in the near future in sales and what the general economic conditions will be in four major markets: Turkey, Italy, Japan and the UK.

The Commerce Department reports, issued in July, are based on 1978 data supplied by US embassies or US consuls in the countries studied. Here is how the US government sees the situation:

TURKEY. The first modern computer entered Turkey in 1961, but the country still has no established information processing policy. The electronics industry is in the main limited to assembly operations, although efforts are being made to establish a full range of manufacturing facilities. US companies enjoy almost a complete monopoly in the computer equipment market, supplying about 90 per cent of the country's present needs. Although the main competitors today are European companies,

there is a tendency for their share of the market to be eroded by the Japanese.

In early 1978 there were about 150 accounting machines in use in Turkey, and the prediction is made that their number will rise to 428 by 1982.

Estimates call for 446 general purpose computers to be installed by 1982, compared with 136 in 1976.

The trend among Turkish users is to purchase a complete system, with software and peripherals included in the package price.

Computer imports, which are currently running at about \$5 million a year, are affected, for the most part, under a system of annual quotas promulgated by the Minister of Commerce.

Because of Turkey's financial and technological limitations, slow growth of this market to about \$8 million a year can be expected.

ITALY. Despite lingering economic problems, 1976 was a year of recovery for the Italian economy, especially for the country's business machine and data processing industries. Composed of a relatively few companies such as Olivetti, and US firms like IBM and Honeywell, the industry produced nearly 30 per cent more revenue in 1976 than in 1975. Small and medium sized businesses became increasingly important

there are no significant technical or commercial innovations that will impact the British market in the coming year.

The current pattern of purchase favours small and very small computerised business systems and peripheral equipment designed to decentralise data processing. US minicomputer makers, such as Hewlett-Packard, Digital Equipment and Data General, expect the 1978 boom in sales to continue through 1979. ASSINFORM, the Italian industry's trade association, predicts the positive trend will permeate 1978.

Unit sales of desk-top printing calculators and small business machines are expected to increase 30 per cent in 1977 over 1976. Olivetti believes that sales of scientific minicomputers, however, will be slow because of the limited scale of scientific research in Italy.

JAPAN. At the end of September, 1978, there was a total of 37,881 general purpose computer systems in Japan, valued at \$7.9 billion. Of that number, 24,331 were and were valued at \$4.5 billion and 13,550 were of foreign origin and valued at \$3.4 billion.

The market share of domestic systems in use represented,

therefore, 57 per cent of Japan's installed base.

The largest computer user by industry category is trading, including both wholesale and retail trade. Trade lends other industries by a wide margin, and is followed by finance, chemical and petroleum, electrical machinery and transportation. The Commerce Department report makes no attempt to break down the foreign systems by country of origin, but it is generally believed that US computers, dominated by IBM, NCR and Univac, lead in sales.

No forecasts of the Japanese computer market were made by the Commerce Department.

BRITAIN. The computer equipment market in the UK continues to grow despite economic fluctuations. The UK is one of the largest markets for computers in Europe, and the existence of only one major indigenous manufacturer, ICL, makes it an attractive market for US manufacturers.

Business data processing is by far the largest sector of the market. The traditional market shares are estimated to be the region of 30 to 35 per cent each for IBM and ICL, with NCR, Burroughs and Honeywell tied for third place.

The struggle for the top position has been evidenced for at least 10 years despite UK government policies designed to improve the situation of ICL.

Within official circles, there is a strong "Buy British" sentiment.

Objections to preferential treatment afforded ICL have been voiced by US manufacturers, but the suppliers of peripherals and components, unlike those in the computer business, have been wisely discreet.

Although an accurate breakdown of the benefits to US suppliers of ICL's operations could not be obtained, industry sources believe that approximately 40 per cent by value of the components in ICL's computers are of US origin or are supplied by US firms with facilities in the UK.

Smaller British firms appear to be either short of new technology or short of cash, and in both cases they look favourably on agreements with US firms.

With the exception of a proliferation of new applications for small dedicated computers,

Computing centre for chemists

A NATIONAL computing centre for chemists at academic, industrial and government research laboratories is being set up in the US.

The National Resource for Computation in Chemistry will be based at the Energy Research and Development Administration's Lawrence Berkeley Laboratory in California and funded jointly by the administration and by the National Science Foundation.

Control Data 7800 and two top series computers. It will provide computing resources for research in topics like crystallography, quantum chemistry, kinetics, non-numerical methods and user systems.

Earl Hyde, deputy director of the Lawrence Berkeley Laboratory, said the centre "should develop into a unique facility for all theoretical chemists here over the next 10 years."

The centre is due to start operating next month. Its first year budget is \$1.3 million, and is expected to increase to \$2.4 million for 1980.

The aim of the centre is to

provide powerful hardware and specialised software to solve research problems in chemistry.

The centre will have access to the Lawrence Berkeley Laboratory's

14, 1974).

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The letter eventually bore the names of about 200 Congressmen, even though Dornan

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over the objections of the Congressmen involved. Two of the several worth noting are James Wright of Texas, House majority leader and ardent Democrat, and Charles Rose of South Carolina, who figures prominently in Congressional computer activities. Other Congressmen say that they lent their names to the petition because they saw that Wright and Rose had signed.

The opposition to the sale of the computers sold to East Europe, including those sold for high-energy physics work during the Nixon administration, have ever been diverted from their planned uses. Loud debate was not observed as those sales were pending, perhaps because Nixon held the trust of the American

right-wing, the source of the most vocal opposition to the Cyber 76 sale.

The prevention of the CDC

sale of a Cyber 76 to the Soviets will not end the sale of US computers to ideological adversaries — nor will the harassment of the Press and its sources of information stop journalists from their work. In fact, the opposite may occur. The atmosphere of intrigue surrounding the Cyber 76 debate may bring the conduct of the computer industry to greater government and public attention. It could result in changes in policy that will displease persons holding extreme views on both sides of the ideological fence.

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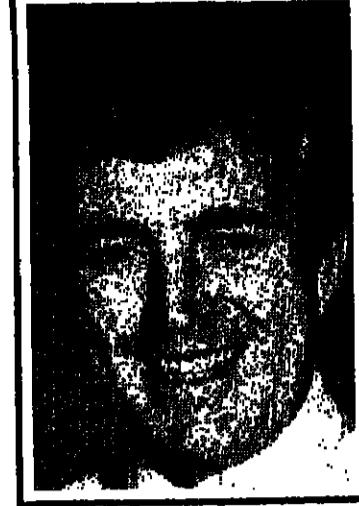
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The accelerating merger of computer, communications and semiconductor technologies heralds the arrival of the "Information Age", writes MORRIS EDWARDS (pictured left). But he says that, while their destinations

may be the same, the routes by which Britain and the US will travel to this new era look like being markedly distinct. Edwards is a Boston-based data communications consultant, and has more than 16 years' experience

in telecommunications both in the US and in his native England. Recently he was editor of the Datacomm User Magazine, and programme chairman of the annual Datacom conference and exposition.

Heralding the Information Age

IN the United States, as in Britain, the accelerating merger of computer, communications and semiconductor technologies is heralding the arrival of the "Information Age." However, while their destinations may be the same, the routes by which Britain and the United States will travel promise to be markedly distinct, reflecting the substantial differences in the governmental, regulatory and industrial makeup of the two countries.

Government in the United States is separated into three departments, one vested with legislative power, one with executive power and the third with judicial power. At the federal level, these departments translate into Congress, the Executive Office of the President and the Supreme Court, each of which could play a role in developing a national information policy.

When he took office in January, President Carter inherited a report which strongly recommended the formulation of a co-ordinated national information policy. Prepared by the Domestic Council Committee on the Right of Privacy under then

Vice-President Nelson Rockefeller, the report stated that a great number of public policy questions were being generated by advances in computer and communications technology and by citizen demands for "clarification and their rights to have and control information."

Specifically, the report proposed an inter-agency council on information policy with a full-time chairman and high-level representatives from federal agencies. In addition, it recommended an advisory committee with members drawn from the private sector, local government and the academic and professional disciplines concerned with information policy issues.

An office of information policy, established in the Executive branch to advise the President, would prevent information concerns from being compromised. Details of the plan that she and President Carter both attach significant importance to communication issues.

In Congress, concern over the OTP reorganisation comes mainly from the Senate and House Subcommittees on Communications. Both groups have been holding hearings to decide whether it is time to update the

Budget (OMB) and the Department of Commerce.

If Congress takes no action on the proposal by mid-September, the split goes into effect automatically, putting policy matters in the hands of an Assistant Secretary of Commerce for Communications and Information.

Many have expressed con-

Critics of the plan have been assured that President Carter attaches significant importance to communication issues.

cern over the demise of OTP, and Congress is examining what, if any, action should be taken to maintain a strong and visible policy-setting force. Meanwhile, Commerce Secretary Juanita Kreps has reassured critics of the plan that she and President Carter both attach significant importance to communication issues.

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Communications Act of 1934 to bring it in line with such technological developments as satellites, hybrid data processing/communications services and microprocessors.

Since a major re-write of the Act would raise critical issues affecting information policy, the subcommittees are naturally apprehensive of any downgrading in the status of OTP.

To provide a technological background to its deliberations, Congress has asked its advisory arm, the Technology Assessment Board to study interacting communications, computer and information policies.

Working under a \$75,000 budget, the Board will examine new technologies such as satellites, fibre optics, solid-state devices and advanced switching-multiplexing and digital techniques. It will also look at new services for transportation, electronic mail, electronic funds transfer, financial and business services, health-care delivery, education and aids to the disabled.

Meanwhile, the FCC is undergoing an overhaul of sorts as it wrestles with the complexities of regulating communications in the face of encroaching data processing technology. As early as 1968, the FCC recognised that communications carriers might be tempted to enter the unregulated data processing business and compete unfairly by subsidising their unregulated activities through monopoly revenues.

This concern led to the five-year-long Computer Inquiry study, following which the FCC issued rules governing the distinction between data processing, which it decided not to regulate, and message switching, which it would regulate.

It was the FCC's recent policy of favouring competition in communications that ultimately resulted in Congress reviewing the Communications Act of 1934. The FCC's pro-competition policy dates from 1968, when its landmark Carterfone decision ruled that independent (non-AT&T) equipment could be attached to the switched public telephone network. Previously, AT&T had enjoyed a complete monopoly over the supply of such equipment.

For data users, the major benefit of the Carterfone decision was the freedom it gave them to use higher-speed or cheaper versions of the modems offered by AT&T. Over the next few years AT&T's competitive front broadened considerably when the FCC ruled that any "specialised" carrier could offer interstate private-line services simply by demonstrating that it had the required technological and financial muscle.

AT&T claimed that such carriers would "skim the cream" off the lucrative long-haul private-line services, leaving AT&T with the less profitable short-haul business.

AT&T argued that, since its profits from long-haul services subsidised the switched network, loss of that business to the new carriers would force up the telephone bills of homeowners across the country.

Failing to convince the FCC with this argument, AT&T finally took its case "to the public" last year by having bills introduced in Congress effectively to reverse the FCC pro-competition rulings and reinstate a total communications monopoly.

Known collectively as the Consumer Communications

Reform Act of 1976, the bills would have outlawed the specialised carriers — while allowing AT&T to buy them up with immunity from anti-trust action — and shifted much of the regulation responsibility from the FCC to regulators in the 50 states, where AT&T has more political clout.

Initially, AT&T gained considerable Congressional support for the bill with the populist argument that the FCC was favouring the interests of big business at the expense of the average telephone user.

Opposition forces soon marshalled their resources, however, and thwarted passage of the bill. In the ensuing debates, though, sufficient communications policy issues were raised to convince the House and Senate Subcommittees on Communications that the 43-year Communications Act was due for study, and possible revamping.

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Known collectively as the Consumer Communications

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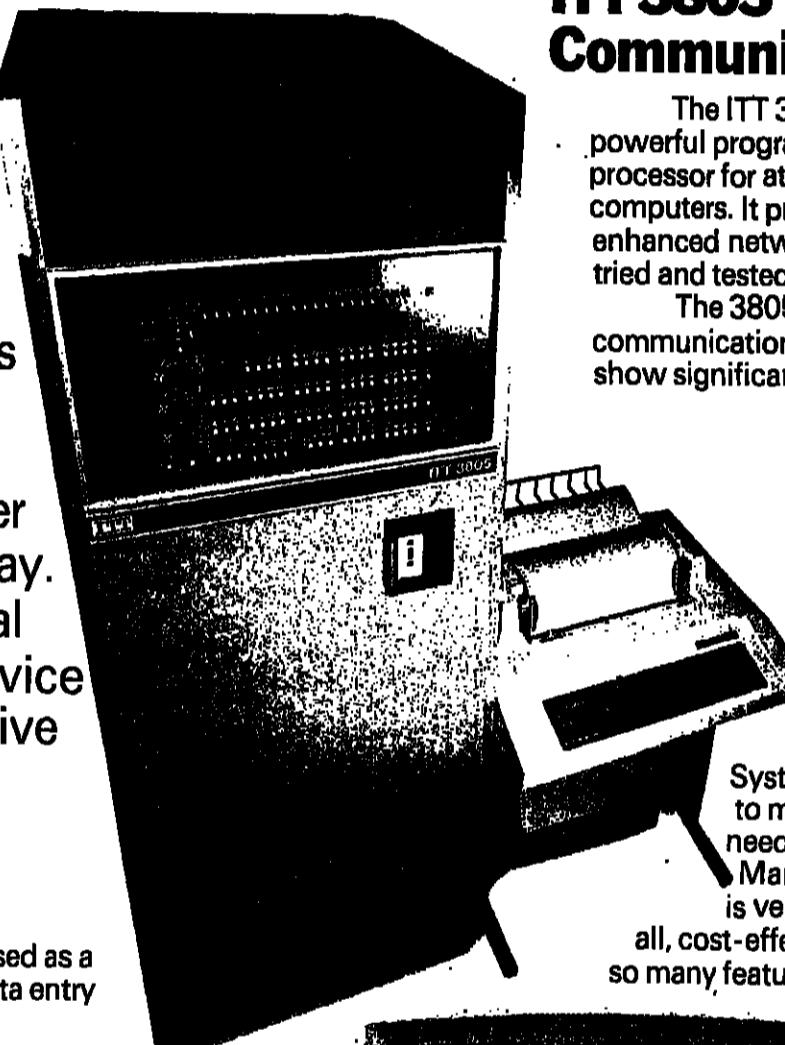
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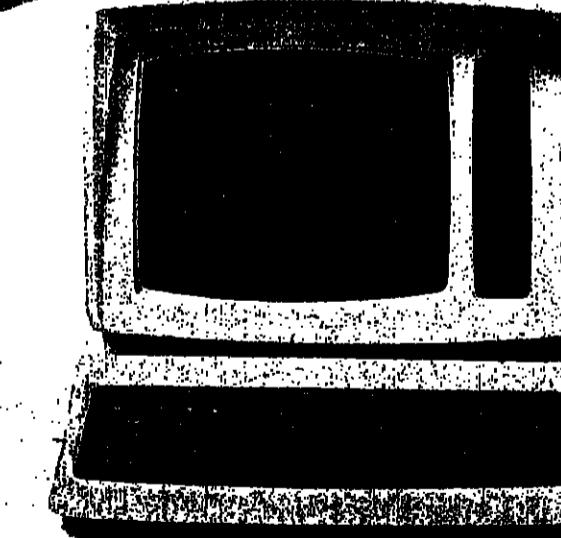
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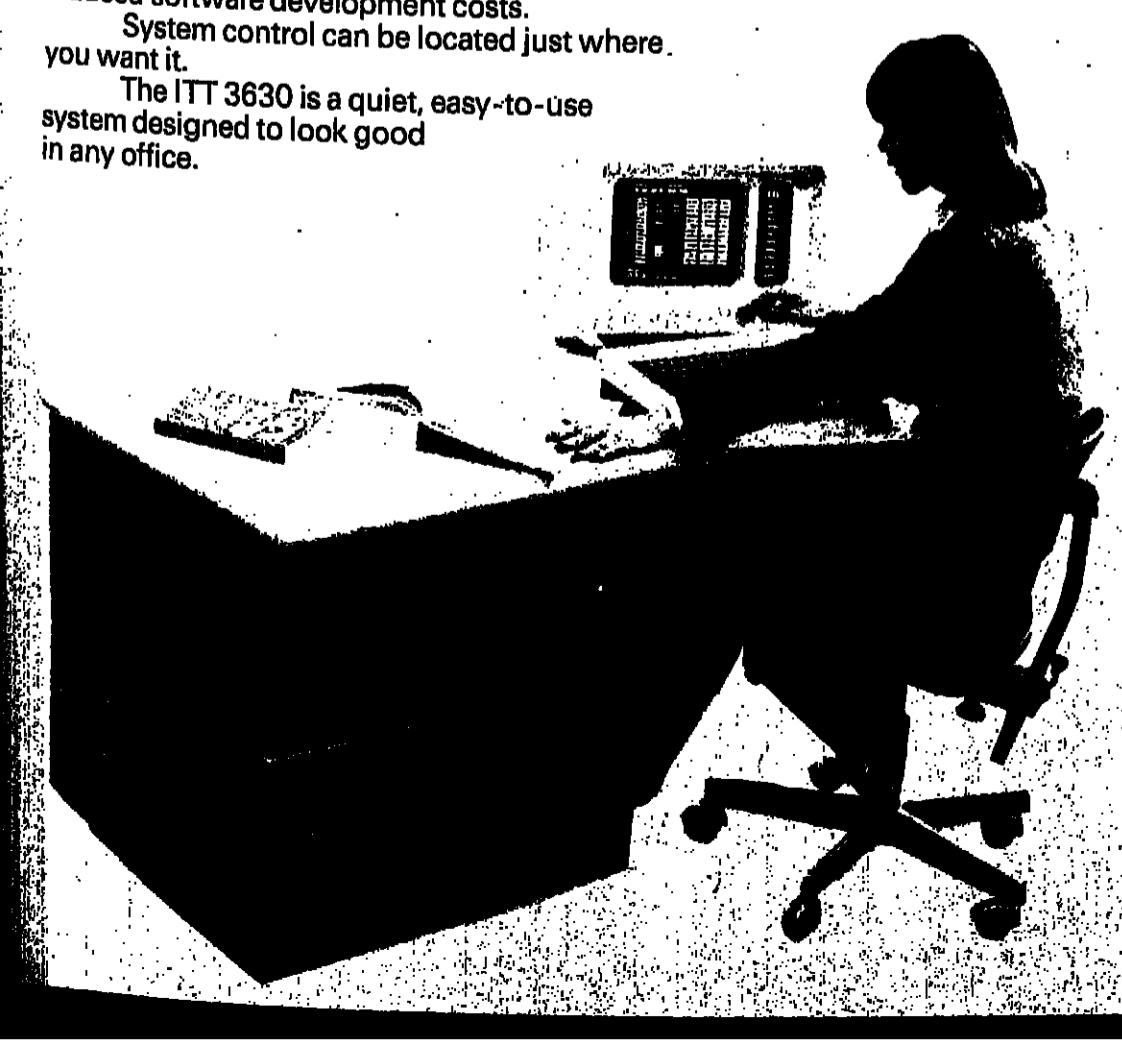
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MARKETVIEW

Survival plans for the Eighties

FOUR years ago, six European-owned companies still competed against IBM in the medium to large scale general purpose computer market. In order of size they were ICL, Siemens, CII, Philips, Datastar, and Telefunken Computer.

Today, only the first two survive in that market, though they have been joined by CII-Honeywell Bull which achieved "European" status when its French shareholding was raised from 34% to 53% in July, 1976.

Which of these three will still be around — at least in the general purpose mainframe market — in 1981, four years from now?

This somewhat morose thought is prompted by a little reported talk by Pierre Lepicard, CII-HB's financial director, to a gathering of European financial journalists in Guernsey earlier this year.

After describing the economics of designing, manufacturing and marketing a range of end user systems as wide as IBM's, M Lepicard displayed again the financial model with which Honeywell Bull had previously justified its absorption of the CII DP division. Figure 1.

According to this, a general purpose systems manufacturer with \$12 billion revenues in 1975 and therefore a 55% share of world DP systems revenues (guess who?) would have been left with 30% of revenue as profit after allocating other parts of the revenue to direct production costs, R&D, marketing, maintenance and administrative overheads.

These costs do not decline proportionally with revenue, so that the smaller a manufacturer's share of the world market, the smaller too will be the profit. But this might still be a healthy 15% for a manufacturer with \$3 billion annual revenues and a 14% share of the world market in 1975.

M Lepicard claimed that with an 11% share of world markets, especially ICL and the Siemens

Honeywell Information Systems-CII Honeywell Bull partnership were close to that position, and thus well set to survive into the 1980s.

In the nature of things, however, there is room for only four manufacturers or partnerships to have market shares as large as those of Company C in M Lepicard's model. He believes that few of the other five US companies, the two Europeans or the three Japanese had an equally healthy financial profile.

The profile of most of them, especially ICL and the Siemens

ship to ICL and Siemens, to help share out the burden of developing new systems for the 1980s.

That must have startled the Siemens top management, still suffering the aftermath of the Unidata collapse, and raised a laugh in the ICL boardroom in the light of the rising profits shown in its latest annual report.

But his proposal cannot be dismissed so lightly, if ICL's and Siemens' long term prospects are really as grim as M Lepicard predicts. So the first question we have to ask is: How true is M Lepicard's model?

One assumes that it is based on CII-HB's and Honeywell's own experience. But, if so, it can only apply to manufacturers or partnerships that market all sizes of systems in all countries of the world to all types of user.

Apart from the HIS/CII-HB partnership and IBM, only one other general purpose systems manufacturer does so, Univac.

All the others specialise more or less by type of system, geographical coverage, and the types of user. The economics achieved by such specialisation are not negligible.

Burroughs, for instance, has consistently been one of the most profitable companies in the industry on a mere 4% share of world computer manufacturers' revenues, simply by narrowing its market target area to the financial market, the US Federal government and US universities. NCR sells only terminals, small and medium size systems to the financial and distributive trades, while CDC concentrates mainly on large scale machines for scientific users.

And like all computer manufacturers, ICL and Siemens will have to start incurring increasingly heavy R&D expenditure to match the products that are believed to be developing towards the end of the pay-off period.

Neither factor is likely to continue to the same extent; the contrary, North Sea oil is now causing the pound to be up on foreign exchange rates at the very moment when the end of the pay-off period is likely to cause British wage costs to rise more rapidly.

It may well be, however, that the trouble with Unidata was that it tried to merge too much rather than too little.

However, any systems to be produced in the 1980s by surviving European manufacturers, whether singly or jointly, will have to be very different from their existing systems, to take full advantage of the low cost microprocessors and new mass memories that will then have become available.

It is only by microprogrammed emulators that the systems of the 1980s will maintain upward compatibility with the current systems, and both ICL and CII-HB have already demonstrated how to make one and the same machine run under several different microprogrammed instruction sets.

As Brûlé told Computer Weekly last year (CWI, November 11, 1976), it is self-interest that keeps HIS and CII-HB together in marketing each other's products, rather than any constitutional powers that the product planning committee may have.

Based on the HIS-CII-HB

model, ICL, CII-HB and Siemens DP division could each keep its own individual identity, corporate structure and ownership pattern, and yet co-operate in developing manufacturing and marketing a common product range for the 1980s. But could they agree on what those products should be?

Table 2 shows the current product lines of three European mainframe manufacturers compared with those of IBM and Honeywell. By a strange coincidence there is greater similarity between CII-HB's French-developed eight-bit byte-oriented Series 60, Level 64 and the equally byte-oriented large ICL 2900 series systems from the 2900 upwards, than between Level 64 and the Honeywell-developed 36-bit word Level 66, or between the large 2900 series systems and the 24-bit word 2903/2904 range.

Both the Level 64 and the large ICL 2900 systems share also the same ANSI 73 definition of Cobol and Fortran, and are only programmable at high level.

It would be premature, however, to see there the basis of a future common European product line. The Siemens 7000 series, which is also eight-bit byte oriented, uses IBM rather than ANSI language standards down to Assembler level, and all three manufacturers have their own operating systems and job control languages.

Similarly, ICL's VME/B operating system, written in the high-level S3 language, could be made portable to other hardware systems. ICL has also adopted the same IDMS database management system for the 1900 series, 2904 and the large 2900 series. Its author, the Culicane Corp, has also implemented on the IBM 370 and the Digital Equipment PDP-11.

All three also have their users breathing down their necks, and insisting on the most complete compatibility with their existing systems. That is why Siemens has always been so dogmatic about maintaining the closest compatibility in source language

with IBM. The German government and others users treat IBM standards as de facto

standards, because 80% of German installations consist of IBM, Siemens and Univac Series 90 and 9000 systems which conform to them anyway.

For the same reason, CII-HB

had to promise French government departments continued support for the ex-CII Iris range until it was ready to announce a fully upward compatible joint successor range for both it and the Series 60, Level 64. This will be P7G, to be announced in 1978 for delivery from 1979 onwards.

And ICL will have to concede

DME on the 2900 to former 1900

and System 4 users not yet ready

to convert to large 2900 series

language standards and data

structures.

Such co-operation seems not

only desirable but even essential.

New languages are being

developed for the use of

non-computer executives, these

will have to be in each user's

own national language, and

correspond to national accounting

conventions.

Each manufacturer might

thus have to develop no less

than a dozen different user

languages, one for each national

market, a formidable undertaking.

Co-operation between the

three European manufacturers

would reduce the task to about a

third of what it would otherwise

be.

New York, it markets its general purpose computer systems in the Commonwealth, and in Europe North of the Alps and Pyrenees. Its largest systems, 2970, 2978 and 2980, are marketed only in the UK, France, Germany, South Africa and Australia.

Such geographical specialisation is bound to reduce marketing and maintenance overheads.

If those two cost items are cut

half for company D, then the

company's financial profile

would be miraculously im-

proved from a 3.3% to 2%

profit on a \$1.5 billion turnover.

But there is no room for complacency. The Leopold model looks uncomfortable close to ICL and Siemens' reality for the first half of the decade.

During the last two years,

the financial prospects of the

two companies have brightened considerably.

ICL is expanding at last and recording increasing profits.

Siemens has cut its losses sufficiently for it to list

the division as an independent centre in October, 1978.

Both companies have enjoyed

a cut in costs in the compo-

nent part of their production and R&D costs for a full 12 months before the price cuts that ICL had to concede to keep its 2900 with IBM. In the UK ICL has foreign price rises despite the falling value of the pound.

Neither factor is likely to

continue to the same extent;

the contrary, North Sea oil is

now causing the pound to be

up on foreign exchange rates

at the very moment when the

end of the pay-off period is likely to cause British wage costs to rise more rapidly.

It is hard to see any of the

British, French and West Ger-

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sacrifice of the much subsidised

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All the others specialise more

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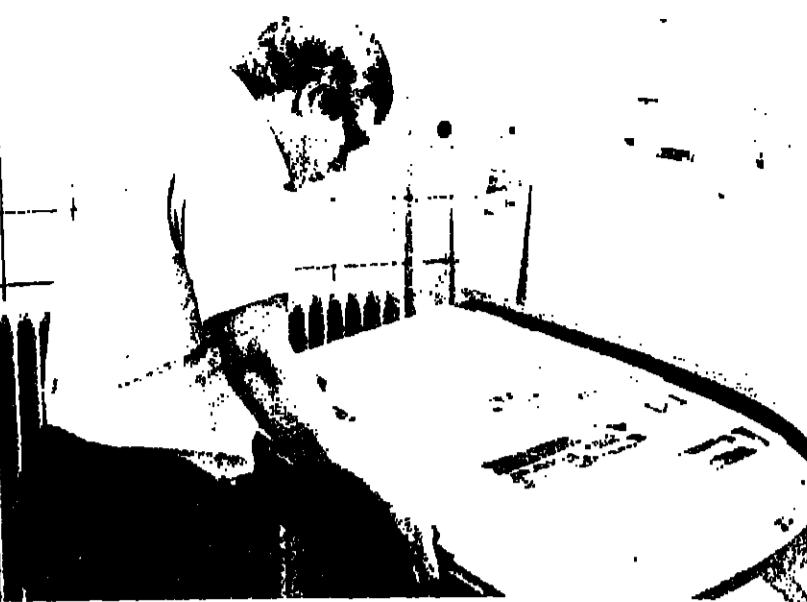
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How Brabants Nieuwsblad joined the revolution...



A journalist on the Brabants Nieuwsblad looking at the newspaper, the copy for which is on the visual display terminal instead of the typewriter.

IN the editorial offices of the Dutch daily newspaper, Brabants Nieuwsblad, you would almost be able to hear a pin drop.

The journalists are there, but their clattering typewriters have been replaced by computer terminals which gives the Dutch newspaper the most advanced editorial offices in Europe. It took more than a year of research, a lot of hard negotiating with unions, constant communications with

staff, and a foresight of the company's future financial position to bring about this change.

Traditionally, it has been in the US that the technical revolutions have taken place. This time, though, it is in a quiet village in Holland — a mere 300 miles from London as the crow flies — where journalists have been learning what this revolution really means.

Brabants Nieuwsblad is one of 41 daily newspapers in Holland.

It is one of five papers — the others are weeklies — produced by the company, which also has a commercial printing firm in the group. Its circulation is 60,000, and in common with most of Holland's dailies 86% of its circulation is on subscription, being delivered to the subscribers' homes by its own newspaper boys.

The company is one of the last half a dozen remaining privately-owned publishing groups in

Holland. Three years ago, it was the first to introduce phototypesetting. "I think I knew then that we wanted to be the first to introduce an electronic newsroom," said Cor Meerbach, editorial director.

Meerbach, a journalist for the last 36 years, is still a working editor, running the 30-strong staff of the Brabants Nieuwsblad. He first became convinced that an electronic newsroom could work after he visited the

US and saw the Harris Intertype system in operation at the Quad City Times in Davenport.

"I also realised that there could be a lot of prejudices aroused even before the system went in, if a good communication with the staff was not established first. So even before we went to the US we informed the editorial staff of our thinking," said Meerbach.

With Meerbach on his US trip went the assistant editor Joop Pett. They were both impressed with the system they saw in operation and when they returned they recommended that an order should be placed.

In May 1975, Brabants Nieuwsblad ordered a £200,000 Harris system. It comprised a Harris 2500/20 computer with 64K of memory, four discs, each with 2.4 Megabytes, six 1500 visual display terminals, one 1100 visual display terminal and one 150 lines per minute printer. The system would be connected to two Harris TX7 photo-typesetting machines.

Delivery date was set for April last year, and within four months the system was installed through its acceptance trials and passed.

"Earlier in the year we took all our editorial staff to a printing exhibition where the Harris system was on display, so that they could familiarise themselves. Within two or three hours of the system being installed the journalists knew how to handle it. And by the evening we were producing our first edition using the terminals," explained Meerbach.

Compared with the traditional methods, the Harris system cuts out the wasteful area of retyping stories, although this is by no means the only benefit. Normally a reporter would type out his story which would then be edited and retyped for typesetting.

"After the system was installed we made tremendous savings in compositors' time working in the newspaper. We also got the part-time element. We utilised the system to work more efficiently. As a result there have been no redundancies and we are now increasing compositors on the news system for the commercial financial press," explained financial manager Henk Helmen.

In terms of actual figures Helmen explained the times it used to take to produce a page on the newspaper. "A page in the newspaper averages 14,400 characters per page. In the hot metal department it would take an average of 10 hours per page. Phototypesetting cut the time to 5.5 hours per page. With the Harris system this figure has been cut to 1.5 hours per page. We expect to reduce this further to one hour per page," added Helmen.

Three other major editorial papers are now using the new editorial systems in Brabant. "The activity has increased," said Meerbach. "Journalists' writing is more professional. The job finishes when the reporter has edited and revised the story. After the job is completed, the editor's job is to make the changes and give the command given to set. The whole operation this year has been refined down to 48 minutes," said Meerbach. "We plan to put the news agencies on to the system which will give us

ROUNDUP

EEC seeks information on computer user groups

AS a first step towards giving computer users a bigger say in the development of the industry, the EEC Commission is inviting all user groups to ensure that their names and addresses are on its files.

In a letter to Computer Weekly, the Commission says that it wishes to be better informed about the activities of the different European users' groups. User groups should send details of themselves to the Commission of the European Communities, DG III/B/2, Avenue Mr Garric, 200 rue de la Loi, B-1040 Brussels, Belgium. (CW, August 25.)

of Epsom, UK. The £1.1 million payment which OLS is to make to the bureau's parent, the W. S. Atkins group, will be partly in the form of 32,000 OLS shares, and this will make W. S. Atkins one of the largest shareholders in OLS. (CW, August 28.)

PRESIDENT Giscard d'Estaing has set up a committee under the Inspector General du Financement to look into ways in which the French government can better assist the national computer industry. (CW, July 28.)

THE man to lead the US operations of Insac, the UK National Enterprise Board's computer services company, has been chosen. Insac does not intend to announce his name until its UK organisation has been finalised, but Cyrus Joffe, formerly with Univac in the US, is understood to be favourite for the post. (CW, August 18.)

CINCOM's database management system, Total, has been adopted for world-wide marketing by NCR, on its Century and Criterion ranges. (CW, August 25.)

AN enhanced transaction processing executive has been released in the US by Honeywell, which thereby follows IBM's lead in unbundling software on the fringe of its operating system. (CW, August 25.)

THREE major software products — the library of numerical subroutines, and compilers for Algol 60 and Coral 66, from the Numerical Algorithms Group — have been announced by Prime Computer. The library was originally developed by five UK universities but last year the group became a non-profit-making company based at Oxford University. (CW, August 18.)

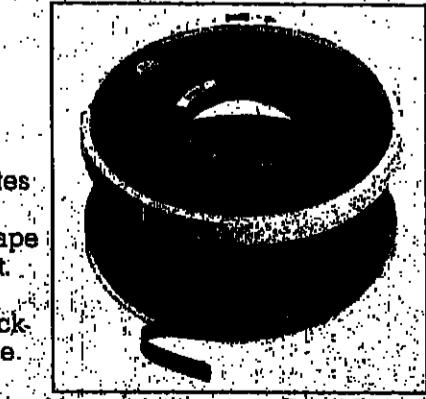
TEST data generation software is scheduled for release at the end of next year by UK software house Management Systems and Programming. The generator will not be a separate new product, but will be sold as a module of MSP's existing Data Manager data dictionary. (CW, August 25.)

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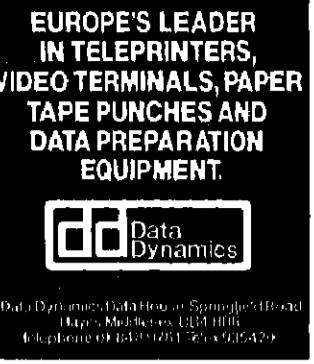
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Motorola pollution control unit for Ford

THE rush to beat the US anti-pollution laws, due to be brought in during 1980 and 1981, has prompted the Ford Motor Company to follow General Motors in ordering microprocessor-based engine control units from Motorola.

The Ford order covers the development of the unit to be based on the 6800 series microprocessor, and is patterned to meet a custom design by Ford. It will be used to control functions such as spark timing.

Motorola won the contract in a three-cornered battle with the Essex Group, a part of United Technologies Corp, reported to be working with Toshiba, and Ford's own Electrical and Electronics Division which was being supplied with microprocessors and peripherals by Intel and Texas Instruments.

Few industry observers in the US expected Ford to follow General Motors into the Motorola camp, as the General Motors order is expected to be the largest production contract for a micro ever gained. The Ford deal is, however, likely to be worth more, as it covers the complete control unit. Motorola is supplying GM only with components.

Although only a development contract, Ford seems likely to stick with Motorola for the production item. The only possible stumbling block is the question of a second source for the unit. Texas Instruments has been nominated as the favourite. While the Motorola design requires one circuit to be fabricated in Integrated Injection Logic, PLI, Intel has ignored this process, and has become an industry leader.

COMPUTER WEEKLY INTERNATIONAL

Datasaab launches first of its new products

THE first of a wide range of new products planned by Datasaab of Sweden has now been announced. Called the D16/30 it provides an upgrade path for D15 users, and as well as using the proprietary Logic 3 language, is programmable in Cobol.

Built around a 16-bit mini from Computer Automation, the D16/30 supports up to 32 workstations, installed either locally or remotely. Main memory extends from 16K to 64K words and disc capacity of up to 120 Megabytes is possible.

A basic D16/30 costs about 200,000 Krone, £25,000, in Sweden. The announcement follows plans to restructure Datasaab into an independent company owned equally by Saab Scania and the Swedish government with a large injection of capital (CWI, July 21). Other new products on the way from Datasaab are an enhanced D5 banking terminal system and a Cobol version of the D12 desk-top accounting machine.

Overview of office environment showing D16/30 processor, disc stations, line printer and display workstations.

Wall Street slump in computer stocks

Potter to fight back

THE founder and chairman of Potter Instruments, John T. Potter, is to fight for control of the company in the US Federal Bankruptcy Court.

In July, two Potter directors

Samuel Alexander and David Porter, tried to dismiss Mr Potter from the board. The company has been trading under Chapter XI of the Bankruptcy Act for two years.

Earlier this year, the company was accused by the Securities and Exchange Commission of concealing its deteriorating financial position three years ago, and of failing to disclose substantial fringe benefits given to Mr Potter (CWI, April 28).

Always mirror investors' attitudes about the prospects for a company or an industry.

One likely consequence of the current situation is a series of acquisitions. The smaller, poorer computer firms may be taken over by their larger and richer brethren.

Two of New York's most influential stock brokerage firms, Oppenheimer and Company and Drexel Burnham Lambert, have published differing but generally favourable reviews of the prospects of the industry's future earnings.

These analyses reveal a future in which the stock values of the computer manufacturers could remain constant or even drop as economic life.

Even IBM, whose stock is usually considered an excellent investment, has suffered despite a corporate financial strategy that has minimised its vulnerability to the unjustifiably gloomy investors.

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JBA

Great Opportunities

THE COMPANY:
Has a remarkable track record in manufacturing a variety of products, most of which are household names, and they have again been granted the Queen's Award for Export Achievement. They are a progressive and continually growing organisation comprising people who are manifestly proud to be a part of it. The company have an IBM 370 running under DOS with BATCH and TP.

THE JOBS:
Due to necessary expansion and the increasing need to 'systemise' further areas in administration, accounting, and manufacturing, staff are required at various levels. The positions offer unprecedented opportunities for creative work and ideas to streamline the company.

THE BENEFITS:
These include career progression in a happy working environment, highly competitive salaries, relocation assistance where appropriate, pension and life assurance scheme, generous holiday entitlement, subsidised staff restaurant, and discount on company products. Above all the positions will offer involvement with planning and developing new systems from scratch, possibly incorporating mini's and on-line terminals.

London-Essex border

Project Leader

up to £6750
Initially to head-up work in the administrative area, e.g. stock control, sales support, etc. Ideally candidates should have an HNC or degree (business studies or computing) plus formal training in systems or project management, but successful relevant experience will be considered equally.

The duties of the successful candidate will be numerous but essentially team leading, identifying and utilising hardware capabilities, meeting time criteria, and using organisational and innovative skills.

Senior Programmers up to £6750*

Will join production control or administration teams to develop database and other programs. Candidates should have around 4 years' IBM 370 background using PL/I (also ASSEMBLER desirable) and ideally DBOMP.

Appointees will be expected to lead a small team of programmers and assist analysts, have the ability to utilise hardware available and, at times, work to demanding time constraints.

Systems Analysts

up to £5950*
Required in production control area and administration (sales). Tasks will be to develop existing and new systems to automate certain aspects in respective environments. Candidates should have user department or programming experience and, if possible, formal systems training. O & M background would be very useful and completion of at least one successful project involving IBM equipment.

Excellent opportunities for appointees to utilise creative skills and progression to project leadership.

Applications Programmers

up to £4500*
Vacancies exist in each team: administration, production control, and accounting. Programming in PL/I and candidates must have about 2½ years' experience ideally on IBM under DOS. A second language and knowledge of job control is desirable as well as a team-minded approach to work. Excellent advancement prospects exist within department.

*OVERTIME PAID AT PREMIUM RATES

For further information on any of the above vacancies please contact

Mike Creamer,

JAMES BAKER ASSOCIATES International Personnel Consultants
16 Maddox Street, London W1. Tel: 01-491 4478

ESSO RESEARCH CENTRE

TECHNICAL PROGRAMMER

The Esso Research Centre invites applications from candidates who have a Mathematics qualification, and experience, preferably in a Technical area, with DEC or IBM 360/370 machines, to join a small team which provides programming and data processing support to the research and technical services of the centre. Programming in Fortran and Basic, the team uses a DEC PDP 11-34 time sharing system, with remote job entry to IBM mainframe. The successful candidate will be responsible for the operation and maintenance of the system, liaising with manufacturers to correct faults. He/She must be able to discuss, with technical staff, their engineering or chemical problems and translate these into computer solutions. This will involve some analysis plus the necessary programming skills to solve these problems. In addition to a good progressive salary there are excellent benefits. The centre is located near Abingdon in pleasant rural surroundings. London is an hour away, Oxford only twenty minutes. If necessary relocation expenses will be paid.

Please apply with full details of qualifications and experience to:

Mr. Dermot P. Sweeney, Employee Relation Services,
Esso Research Centre,
Abingdon, Oxfordshire OX13 6AE. Telephone: Abingdon 21600



**Teesside Polytechnic -
HEAD OF THE COMPUTER
CENTRE (Grade V)**

Applications are invited from good Honours Graduates with substantial computing and managerial experience. The Centre's present main computer, an ICL 1803E, is due to be replaced shortly by a large new multi-access system, to provide interactive computing facilities to all departments within the Polytechnic, including those operating specialist Undergraduate and Postgraduate courses in Computing.

Salary: £7,887 to £8,680 per annum.

Application forms and further particulars from the Staffing Section, Teesside Polytechnic, Middlesbrough, TS1 3BA, Cleveland County.

**FURTHER
APPOINTMENTS
APPEAR
ON PAGES**

24 — 25 — 26

Programmers

The Independent Broadcasting Authority is a public Authority responsible for Independent Television and Independent Local Radio. The Data Processing Department is situated near Winchester, Hampshire - a rural location approximately one hour from Waterloo. Ideally we require Programmers, (male or female) with 1-2 years TDS and TDS COBOL programming experience but some training in TDS and TDS COBOL could be provided to candidates with a sound knowledge of COBOL. The work involves programming for our new Honeywell Level 60 Computer using database techniques and transactions programming. Applications include Financial Analysis, Stock Control and Broadcasting Statistics. Starting salaries will be within the range £3,352 - £3,997 (inclusive of pay supplement) according to experience. Re-location expenses will be paid, where appropriate.



INDEPENDENT
BROADCASTING
AUTHORITY

Please write or telephone for an application form to:-
Pauline Carville, Assistant Personnel Officer,
Independent Broadcasting Authority, Crawley Court, Winchester,
Hants. SO21 2QA Telephone Winchester 822270

DATA CONTROL

LOCATION: HERTS.

Our clients are a major U.K. company with a substantial investment in the D.P. and Current hardware consists of ICL 1900 equipment with full teleprocessing facilities. Because of constant reappraisal of future hardware requirements and the investigation into new and more sophisticated operational techniques, our clients can offer a rare career opportunity in a truly professional environment.

The current vacancy is for a Shift Data Control Clerk with a minimum of two years experience. Essentially candidates must demonstrate a sound knowledge of Data Control procedures. An added advantage would be an ICL 1900 background with a knowledge of GLI systems.
Ref: Mt-331.

D.P. RECRUITMENT LIMITED
Kent House, 87 Regent Street, London W1R 7HF
Tel: 01-437 2062/3/4 (24-HOUR ANSWERPHONE)



Name _____
Address _____

COUPON

addressed to:

Frances Dunn - 2nd Floor
North West House,
119-127 Marylebone Road,
London NW1.

**I'm appealing
to those who
appreciate
FIGURES!**

'Between you and me, I was very surprised when the advertising agency said they had this new client who wanted me to model for an advertising campaign aimed at recruiting experienced computer staff.'

'Well let's face it I know absolutely nothing about computers. And I certainly didn't want to go around propositioning people, that sort of thing can get a girl a bad name.'

'Then they explained. They wanted me to put the message across. Maximum impact was what they wanted, in a recruitment market that cried out for originality. Well here I am!'

'Now let me see, what was the message? Oh yes I remember! Our client, whose name I can't reveal for the moment, is a prominent marketing orientated company based in West London. They currently require computer staff, male or female, to develop a major new network system involving all sorts of up to date gadgets and languages. I think they mentioned I.B.M. 370/138 or some such figures.'

'Personally I never was very good at figures, well not that sort anyway, but I got quite excited when I heard the money, conditions and long-term prospects they're offering. And there's talk about a super car, relocation package, pension, subsidised meals and lots, lots more.'

'Now have I forgotten anything? Yes, how do you know if you're suited? We're looking for experienced

Chief Programmers	£6000
Systems Programmers	£5500
Systems Analysts	£5500
Operations Supervisors	£5000

'Interested? Then the next stage is easy. Pick up the phone and ring (01) 402 4525 for an application form or if you prefer complete the coupon and leave the rest to me.'

'By the way if you know anyone else who appreciates the sort of figures I've been talking about, why not pass on the word.'

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

SENIOR D.P. OPPORTUNITIES

NEW INSTALLATION S.E. LONDON

A major Group of Companies whose interests encompass various manufacturing activities in the engineering industry, plan to install their own in-house computer.

The installation will be sited at their Head Office in S.E. London and provide D.P. facilities to all Companies within the Group.

Two key personnel are now required to play a major part in the initial systems overview and selection of hardware, followed by systems development and establishment of the installation.

D.P.M. DESIGNATE c. £7000

This is an excellent opportunity for a Senior Analyst or Project Leader seeking to progress to D.P. Management. A strong commercial background with a good record of total systems implementation, preferably gained in a stock/production control environment, is required. The successful candidate must have team leading experience, be user oriented, and have the ability to liaise with staff at all levels.

The position will initially entail a complete review of all potential areas of computerisation and formulation of a development schedule. He/she will be instrumental in the selection of hardware and hold responsibility for systems implementation.

ANALYST/PROGRAMMER c. £5500

An Analyst/Programmer is required to assist with the initial systems overview and specification. A sound COBOL programming background is essential and candidates should be familiar with high standards of documentation.

A complete range of applications are to be investigated and the successful candidate must have the potential to progress to a more senior position within the installation.

Both positions carry a full range of benefits commensurate with a major organisation.

Please telephone for a confidential discussion or write to:
30 Fleet Street, London EC4Y 1AA
01-353 5868

Programmers

We offer the opportunity to:

- * Work on differing hardware, learn new operating systems.
- * Gain experience in on-line systems, with both main frame and mini.
- * Work on a variety of applications for different clients and have real on the job responsibility.
- * Improve your earnings, with bonuses directly reflecting your own efforts and skill, and progress your career in an expanding company.

EUSTON BASED
£4,500/£5,500

We are a well established computer consultancy and software house within the Fraser Williams Group; most of our assignments are around the Greater London area but opportunities to travel within the U.K. and overseas do occur.

Continuing expansion and promotion has created vacancies for career minded, presentable and articulate programmers with upwards of two years experience on any hardware.

For further details contact:

Ian Gold, 01-388 0038
Fraser Williams (London) Ltd
38 Warren Street
London W1P 8PD

Fraser Williams computer consultants

Robert Brett & Sons Limited

PROGRAMMER—RPG II—CANTERBURY

Salary to £4,000

Robert Brett & Sons Ltd require a programmer with a minimum of 18 months RPG experience to fill an important vacancy in the Computer Department. Applicants should be capable of working on their own and experience of on-line enquiry or direct entry would be an advantage. There will be opportunities for systems work for the right applicant.

The Company's activities include sand and gravel extraction, ready-mixed concrete and engineering. Conditions of work are good, including free life insurance, sports club, canteen and pension scheme.

The present machine is an IBM System 3/10 which will be replaced in 1978 by a more powerful computer including on-line enquiry and direct entry.

Applicants should write as soon as possible to:

Mrs E. M. Northcott,
Group Personnel Manager,
Robert Brett & Sons Limited,
Brett House,
Wetherby,
Leeds,
Kent, TN1 3TZ
Telephone Canterbury 68885

ROBERT BRETT GROUP

West Yorkshire Metropolitan County Council Traffic Unit

TECHNICIANS, URBAN TRAFFIC CONTROL LEEDS/BRADFORD POST REF TF34001/4

Grade T3 £2922 to £3282 plus phase 1 and 2 supplements

The UTC scheme involves the Computer control of traffic signals in Leeds and Bradford. Closed Circuit Television facilities will be provided for monitoring traffic.

Control centres are being provided at Leeds and Bradford; they will be operational from 6/7 am to 7 pm Monday to Saturday. The control centres will also act as fault report centres for traffic signal faults, and they will be manned by 2 Technicians on a shift basis. A shift allowance will be paid.

The duties of the posts include both control room operation and first line maintenance procedures on equipment installed in the control centres and on the street. Appropriate training will be provided.

Applicants should be suitably qualified and have a light electrical engineering background or relevant operational or control experience. A driving licence is required.

Applications on a form to be obtained from Director of Planning Engineering and Transportation, Room 238, Cor Hall, Wetherby which should be returned by 26 September 1977.

how good are your prospects?

If your present environment is restrictive and unrewarding and you want the chance to use and extend your expertise in a very progressive atmosphere, then we can offer you that opportunity. It means working hard, but the satisfaction of achievement and the benefits gained are quite exceptional.

Our immediate need in London and Coventry is for

PL/1 programmers

Preferably with IMS experience who will enjoy the challenge and variety of a wide range of interesting, and sometimes unusual, projects, requiring the full use of your experience.

Systems designers and project leaders

Who certainly must have IMS experience and who have the personality and qualities to accept total responsibility for their projects. These are senior and important positions where you will have the opportunity to demonstrate management skills when working in close liaison with client staff and our own personnel.

benefits

Whilst we don't imagine you would join us simply for financial reasons, we do operate a very good benefits package — profit sharing scheme, pension and life assurance and BUPA. If you wish to relocate to the Midlands, we will provide assistance with relocation expenses, and housing is cheaper than in the South. Also, based in Coventry, you can enjoy the beautiful Warwickshire countryside and you are very well placed for fast trains to London and a network of motorways. In London you gain the advantage of our special Home-based Expenses Plan. And if you really know your job, salary will present no problem.

From offices in London, Manchester and Coventry, we have achieved an annual UK turnover in excess of £1 million.

We have our own 2903 computer in Coventry, plus the facilities of an IBM 370 in London and the Midlands in association with another company in our group — CRL Bureau Services.

And all this has been achieved in a comparatively short space of time and in spite of the general economic situation.

Our reputation is high in the specific areas in which we operate — total project responsibility, project management, systems design, specialist programming, computer installation management and comprehensive small business systems services.

Our success has been made possible by sound management and financial control and, most important, by the professional and ambitious people who join us.

Now for our further expansion we need more of those people who feel as we do — that promotions should be made from within the company and considerable rewards be given. Also, for those who wish it, there is the opportunity to work overseas.

New SALES opportunity in Leeds

This is one of those ground floor opportunities where the right person can certainly achieve considerable success.

Because of our success in Yorkshire, we are opening an office in Leeds early in 1978, and we wish to appoint someone to handle all sales in this area.

Obviously, software sales experience is important and a knowledge of the local market would certainly be an advantage.

Target remuneration will certainly match your ambitions.

For this appointment, please write to the Managing Director, David Whitham, in Coventry.

For opportunities in London and Coventry, please write to or ring

Barbara Prior
58 Great Marlborough Street
London W1. Tel: 01-437 4088

Sue Benger
48 Queens Road
Coventry, CV1 3EH
Tel: 0203 21113

CRL abacus

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MANUFACTURING SYSTEMS

SOUTH LANCASHIRE

SALARIES HIGHLY COMPETITIVE

SENIOR SYSTEMS ANALYSTS, SENIOR PROGRAMMERS, TECHNICAL SUPPORT PROGRAMMERS

Due to continued expansion and overseas commitments our clients, a major public company, seek additional staff to join their project teams. They are presently utilising sophisticated IBM 370 hardware and extensive development is taking place in the "manufacturing systems area" incorporating CICS and DLI.

The Environment

The Department is organised as a central group function providing a DP service to their UK and overseas divisions. Developments are underway and planned for the future based on distributive processing philosophy. The systems will be on-line with automatic data capture and connected to the host computer.

The Technology

Our clients have been in computing for approximately 18 years. They are currently utilising an IBM 370/158 under OS/VSE, on-line systems under CICS and 3 database systems under DLI. They are currently reviewing present and proposed systems 3-4 years ahead, planning expansion of database and moving into distributive processing to IBM 3790 and 3830 S.N.A. equipment.

The Training for the job

High investment in time and money to develop people to keep pace with the demands of advancing technology.

For the individual

Equal emphasis on personal development of staff in line with their personal aspirations and abilities.

The Opportunities

Promotion is from within — the work plan will provide both the challenge and opportunity for those who have the ability and the ambition to progress. For the travel conscious, 12 people from the centre provided project support in overseas locations last year.

Ref. No. 77/09/10.

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MANCHESTER 061-833 0676 FREEPOST

Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD

LONDON 01-935 0671 FREEPOST 6

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IBM OPERATOR

370/DOS installation require two years + experience for a two shift system. E.C.2. Company.

£3700 + perks

SENIOR OPERATOR

Eighteen months + experience with Gill, three shift system. Hertfordshire installation.

to £3800 pa

CLIENT LIAISON

Must have a stable computer background and be able to deal with people of all levels. Accounts / business experience preferable.

£4000 pa

ICL OPERATOR

Two shift system. 1900 GUI or Manual experience — nine months + W1 installation.

£3000 + pa

OPERATORS

Two years + experience on any machine for E.C.2. installation with two shifts.

to £3500 pa

IBM OPERATOR

One year + experience on IBM 370/DOS/POWER/VS installation in Essex. Four shift system.

£3400 + pa

STAFF

LOOKING FOR JOBS?

Telephone Avril Lively who will take the job details from you.

01-402 0933

SENIOR OPERATOR

Two years + 1900 GUI + experience. Four shift system for EC1 installation.

to £3900 pa

JUNIOR OPERATOR

Six months + experience IBM 370/DOS/VS. Three shift system. Surrey company.

£ Excellent + O/T

DATA CONTROL CLERK

Two years + experience for W.1. company — lots of client liaison.

to £3500 pa

SHIFT LEADER

Three years + experience 1900 GUI — two shift system. Surrey installation.

to £3800 pa

SENIOR OPERATOR

Two years + experience IBM 370/DOS/POWER. Two shift system. Essex installation.

£3500 pa

AJK RECRUITMENT LIMITED (Emp. Agy.)
26 Chilworth Street, Paddington, London, W2

01-402 0933

QJK

'Should we get a 138?'

A Senior Systems Analyst is required at Wyeth Laboratories to undertake feasibility studies and develop new systems in the Production Control and Financial areas.

He or she must have at least two years' experience in a commercial environment and be capable of leading a small team. We also need a small team to assist in this and to design systems to use TP and a Data Base.

Please apply to:
Mrs. J. Andrews, Personnel Officer,
Wyeth Laboratories,
Huntercombe Lane South, Taplow,
Nr. Maidenhead, Berks.
Telephone: Slough 28311

Wyeth Laboratories

ROYAL NATIONAL INSTITUTE FOR THE BLIND

TWO PROGRAMMERS
for Publications Department

Moving to new premises near the Angel Underground Station 1978!

We are soon to replace our current system with a dual mini-computer system for online production of braille literature. As well as the two permanent posts mentioned above, there is a post available for a highly creative who ideally will have experience in some of the following areas: FORTRAN, Assembly language, mini-computers, opportunity to get in on ground floor of exciting new project. Salary after scale £3017-£3780 or £3430-£4230 dependent upon qualifications and experience. Free lunch included.

Applications giving age, present salary, qualifications and experience, quoting reference number to Mr. R. Hagger, Works Manager, 224 Great Portland Street, London W1N 8AA.

We have been retained by one of our clients to recruit the following personnel:
SENIOR ANALYSTS
ANALYSTS
SENIOR PROGRAMMERS
DESIGNERS
SPECIALIST/SENIOR PROGRAMMERS
PROGRAMMERS
All to be based at Croydon, Surrey.
Ring Sue 01-877 8021 for an immediate appointment. PS Appointments, 181 Mitcham Lane, London, SW16.

Stafford Borough Council
TECHNICAL ASSISTANT
(Up to £5,065 p.a. incl.)

Applications are invited for the above newly established post which has the status of Section Head in the Treasurer's Department.

The successful applicant will be principally responsible for the appraisal, design and introduction of computer systems; together with the monitoring and scheduling of data-work flows.

Salary within Grade S01 (£4,239 to £4,645 plus salary supplement).

For further details and application forms apply to Personnel Officer, Borough Secretary's Department, The Hollies, Newport Road, Stafford ST16 1BE (Tel. Stafford 3181, Ext. 218) quoting Post Ref. No. 412.

Covering date: 21st September, 1977.

SOFTWARE SCIENCES

Systems & Programming Professionals

London

AnCO - The Industrial Training Authority

Scientific / Software Programmer

Dublin

Applications are invited for the above post in the Data Processing Division, in Baggott Court, Dublin. The successful candidate will be responsible for programming of scientific applications, mainly in the statistical field.

Applicants should have at least two years programming experience using FORTRAN. A degree with a scientific/statistical content would be desirable.

The salary scale rises to £5,215 per annum. There is a contributory pension scheme in operation.

Application forms are available from:

Personnel Officer,

P.O. Box 486, Baggott Court,

Upper Baggott Street, Dublin 4.

Telephone 01/688777.

Completed forms, quoting reference 173/1, should be returned not later than 27 September 1977.

AnCO
The Industrial Training Authority

Programmer- 1 year's experience London

Have you a minimum of 1 year's experience in COBOL or PL/I? If so, we can offer you an ideal opportunity to join a rapidly expanding computer department at Courage, one of the big six in the Beer and Wine & Spirits business.

We currently use an ICL 1903T, using Maximop and George II+

This month we are taking delivery of a second 1903T to cope with our heavy workload, whilst also considering further hardware requirements.



Courage

Our development plans include the implementation of Database, Management Information and On-line order processing systems, as well as several accounting systems.

If you are interested in advancing your career with us, then write giving details of career to date, or telephone for an application form to:

R. D. Moles, Courage Computer Dept., Saccone House, 17 Cumberland Avenue, Park Royal, London NW10.
Tel: 01-965 8844.

Systems Programmer

Match the challenge of a new installation

**Salary up to £5,200 p.a.
Plus car allowance**

CICS and DL1 but full support and training will be available in these specialist areas.

This is an interesting and challenging opportunity to gain valuable experience.

A salary of up to £5,200 p.a. is offered, which will be negotiable according to your experience. The benefits package includes 25 days' holiday plus 7 statutory days, a generous car allowance, and assistance with relocation expenses where appropriate.

For more information, please contact Marilyn Black quoting reference no. 747.

Kent Based

Our client, the Bexley London Borough, is setting up a new installation and now wishes to recruit a Systems Programmer to be completely responsible for all software development.

This new installation will comprise of an IBM 370/138 under DOS/VS with CICS and DL1. The main area of development will be to establish a database for their Central Accounting System, but there is also a wide range of general local government systems to be fully revised.

You must have a sound knowledge of BAL and 3 to 4 years' DOS experience. Ideally you will be familiar with

CSA
Computing Services Association

John Goldsmith (Computer Recruitment) Limited
15 Buckingham Palace Road, London SW1
Tel: 01-828 5356, 24-hour answering service

JOHN GOLDSMITH (Computer Recruitment) Ltd.

JBA

Sales Executives

London & Home Counties
c. £10,000+on quota plus car
A well known manufacturer wishes to expand its sales force and therefore has opportunities for professional Sales Executives to join an existing team which is well established with an excellent record over the past few years.

Applicants should have at least two years' experience of selling minicomputers, VRC's or computer services and be able to demonstrate a proven ability in the computer sales field.

Immediate interviews will be arranged for suitable candidates.

Contact: Jim Baker

Support Executives
Various Locations
Excellent opportunities have arisen for experienced systems support persons seeking to work in one of the following areas: London, Manchester, Birmingham, Bristol or Leeds.

The Company, a leading international group wishes to appoint d.p. professionals with practical experience of COBOL, communications and operating systems preferably gained on the ICL range of machines. Applicants should have had around three years' programming and design involvement and be keen to participate in systems analysis, and have considerable customer contact.

The company offer a wide range of excellent fringe benefits.

Contact: Margaret Stevens

2900 COBOL Programmers
up to £8000
COBOL Programmers with VME/B experience are at a premium and our client is willing to offer a generous salary, with relocation expenses where applicable to the right person. Successful candidates will join a young, lively and ambitious team engaged on a wide variety of projects based primarily in the South of England.

Large company benefits and excellent opportunities.

Contact: Jim Baker

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

Senior Fortran Programmer
London

to £6000

A vacancy exists within the project team which provides a computing

service to a number of engineering groups. A large variety of powerful

packages are supported for the use of technical departments. The range

includes Implementation, customer support and package development.

This is a small team operating in a very significant area providing

stimulating and challenging work.

Applicants should have previous relevant experience.

Excellent staff benefits and career prospects.

Contact: Margaret Stevens

Design Engineers

London & Berkshire

up to £6000

Our client, a well-known international organisation has immediate requirements for Engineers to assist with the development of computer systems.

Successful applicants are likely to have had at least 2 years' in the design and development of peripheral or communication equipment and must be capable of specifying and co-ordinating the production/testing process. Knowledge of minicomputers or microprocessors would be a distinct advantage as would experience as a systems engineer.

Salaries are negotiable, Large company benefits.

Contact: Mike Creamer

**Engineer Programmers -
A Company that will keep you interested**

Exciting things are happening to this country's telephone network and STC is, as ever, at the forefront. As leaders in our field we are continually pushing forward the boundaries of electronic switching technology.

Test programming plays a vital part in the on-going development of our systems. The job involves preparing test programs using a high level language and deriving test-generation techniques to control the testing of PCB assemblies on ATE. An experienced Engineer (male or female) will advise designers on the 'testability' of their designs.

If you have a background in testing, fault-finding, commissioning or a similar field using modern electronic techniques, we will broaden your experience. And remember, a Company like ours is big enough to KEEP YOU INTERESTED.

For further information telephone Mike Batsch on 01-235 7030 Ext. 233 or write to:

Mike Hendel, Electronic Switching Products Division,
Standard Telephones and Cables Ltd.,
Oakleigh Road South,
New Southgate, London N11 1HB.

Standard Telephones and Cables Limited
A British Company of ITT

Computer Operations Controller

London Oil Medina, which is engaged in the marketing of edible oils and fats and is part of a British owned International group, is changing its computer to an IBM System/32.

An experienced operations controller (male or female) is now required to be responsible to the D.P. Manager for all aspects of operating, data control and data preparation, with a staff of 7. The person appointed should have a mature personality, sound relevant experience and a capacity for hard work. Applicants must be willing and capable of assuming full managerial responsibility yet maintaining a flexible approach concerning their own daily activity.

Salary is negotiable and a contributory pension and life assurance scheme is in operation. The position is based at Camberwell, London.

Please apply, giving brief details only and requesting an application form.

LOM

JAMES BAKER ASSOCIATES
International Personnel Consultants
16 Maddox Street, London W1 Tel: 01-491 4478

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

ANALYST/PROGRAMMER

WEST OF LONDON

Up to £6000

Our Client is a Systems House operating in Middlesex. They currently require several additional staff, prepared to operate in an Analyst/Programming mode to develop new systems for both their Bureau Users and to enhance their own software products.

The successful applicants will have had several years' experience, preferably on at least one manufacturer's equipment. Extensive COBOL programming, combined with some analysis training, is required, although additional training on the Company's systems and products is envisaged.

The Company, a subsidiary of a major international group, is a comparatively small but rapidly expanding systems house, offering a friendly and pleasant environment in a very attractive area close to both M3 and M4 motorways.

DEVELOPMENT PROGRAMMERS

Any Language

£5000

A successful company is recruiting Programmers to fully participate in its new stage of growth. It has a range of IBM mainframes and PDP minicomputer hardware.

The basic requirement is TWO YEARS' COMMERCIAL EXPERIENCE. Any previous minicomputer experience would be an advantage. Applicants should be willing to learn a new language and receive formal training in advanced programming techniques.

Successful candidates will initially contribute to the development of an on-line system. They should have the potential to become further involved with users' requirements in the future.

An attractive range of fringe benefits including mortgage assistance (after a qualifying period) and loan schemes is offered.

ANALYST/DPM DESIGNATE

NEW INSTALLATION

ESSEX

£5000-£6500

Our client, a manufacturing company based in Harlow are currently transferring their computing activity from a bureau base to a new in-house installation comprising IBM small/medium range hardware.

They wish to appoint a Systems Analyst capable of progressing within a short period to the position of Data Processing Manager.

Suitable candidates will be able to offer proven experience in both analysis and programming. Ideally, but not essential, they will have knowledge of RPG II and will have worked in a manufacturing environment.

The person appointed will play a major role throughout the installation period, after which they will assume responsibility for the live systems. Plans for further computerisation include the development of a production control system and an on-line management information system.

ASSEMBLER PROGRAMMERS

S. HERTS / MIDDX.

£4000-£5500

Current requirements and forward plans to keep abreast of advances within the computer industry have created positions within a specialist programming department. The company is interested in meeting people who wish to become more familiar with facets of the operating system in their IBM 370 installation.

Ideally the candidates should be able to offer a minimum of two years' ASSEMBLER and the ability and desire to become Software Programmers.

Full training will be provided and there will be real opportunities for individual career development. These are first-rate openings for those seeking a high degree of job satisfaction in addition to an increase in their future level of remuneration.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 5868

Promotional Opportunities

The fulfillment of a long term planned expansion programme has resulted in our client wishing to recruit the following additional personnel for its IBM installation in CENTRAL LONDON. Further plans are also at an advanced stage that will augment the present configuration by the introduction of DEC PDP equipment, which will be used extensively for teleprocessing.

Chief Programmer

up to £6000

To take direct charge of a small team of programmers, the person we are seeking should have a minimum of four years experience of IBM COBOL under DOS or OS. A knowledge of DEC teleprocessing equipment would be an added advantage. The job would particularly appeal to a person looking for the opportunity of a management position while at the same time maintaining a high degree of technical and practical programming involvement.

Programmer Analysts

c£5000

Reporting to the Chief Programmer, the position requires a person who prefers a programming bias to their job content. However, in view of the heavy commitment to new projects, applicants should be prepared for a certain amount of associated analysis work.

Experience of COBOL, under either DOS or OS, are essential technical requirements.

Both positions carry the usual benefits associated with a member of a large public group of companies.

MAYFAIR CW36/1

PDP II RSX IIM up to £6500 London

An international organisation based in London, having one of the most sophisticated real time systems incorporating a worldwide communication network, is seeking additional programmers.

Based on DEC PDP II's and running under RSX IIM using RTL 2, our client wishes to recruit programmers and systems programmers at all levels. Candidates currently seeking a move which will combine technical expertise plus career progression and have worked on PDP II systems should contact the advising consultant as soon as possible.

MAYFAIR CW36/2

Systems Analysts

City of London up to £6250 +mortgage

A large international banking organisation has engaged our services to assist with the recruitment of Systems Analysts for their installation in the City.

Applicants should ideally have experience of banking systems on an IBM 370. However, candidates with a good proven record of success in other application areas, and who now wish to add banking to their career record, should also apply.

Company benefits include a home loan scheme, free lunches, pension scheme and a total holiday entitlement of over five weeks.

MAYFAIR CW36/3

Analyst Programmers for the Energy Field

London Based

Have you qualifications and energy to reap the benefits offered by our client, a major international oil company, in the growing North Sea energy business. Commencing Salary is up to £5500 with a comprehensive list of valuable company benefits, including free lunches and season ticket assistance.

Preferably you will have two to three years commercially based IBM COBOL experience and a second language, either Assembler, RPG or PL/I. The job offers you the opportunity to use your communicative skills through contact with users. You will probably be under thirty and a graduate with analytical experience.

To discuss the full specification of this exceptional opportunity, contact the advising consultant now.

MAYFAIR CW36/4

Software house seeks owners SPECIALISTS TO C. £6000 - £8000

Our success

- Holland Automation is an international company formed in 1974 and the Group turnover for the first half of 1977 exceeded £350,000 in Holland and the U.K. from pure systems and programming activities.
- the Group's success and its high reputation has been gained from the production of high quality software in the commercial and development software areas of both clients and the major European computer manufacturers and micro-processor companies.

We need

- software specialists to work within application groups on small business interactive systems.
- specialists to work on micro-processor projects for new hardware prototypes.
- responsible personnel capable of working without detailed supervision.

You need

- minimum of four years' proven programming experience in assembler languages, BASIC or PL-I on small business systems, mini-computers or micro-processors.
- to be self-motivated and have worked on computers in a commercial environment.
- to have worked on micro-processors, software development for a manufacturer, or data transmission experience would be an advantage.

Applications, including c.v. in writing to:

Mrs. B. Alken
Holland Automation International (UK) Limited
487a & 488 Bath Road
Clipperton, SLOUGH SL1 6AA, Berks.

Or telephone for Application Form—Burnham (062 88) 85232/3



**Holland
Automation
International**



We offer

- work on variety of projects on latest up to date interactive systems and micro-processors.
- good working environment with enthusiastic motivated personnel aiming to produce good quality software.
- good competitive salary up to £6,500 dependent upon experience plus bonus participation based upon performance.
- full shareholding option and participation in company profits.
- car or car allowance.
- pension and life assurance and medical benefits.
- four weeks' annual holiday.

We do not

- offer working on large scale projects as part of a big team with little feeling of involvement.
- guarantee an unemotional feeling towards the Company.
- want staff who consider themselves more important than the Company or customer.
- need consultants by name and not by proven deed.
- require staff who cannot work without detailed supervision or commercial knowledge.

Telephone 01-499 9214

Kingston: 44 Wood Street, Kingston upon Thames, Surrey,
Telephone 01-549 3212 (24hrs) Telex 27950
Moyford: 5-6 Yarmouth Place, Brick Street, London W1Y 7DW
Telephone 01-499 9214 Telex 27950
Dublin: Canberra House, 24 Lower Leeson Street, Dublin 2.
Telephone 762170 762188 785692 Telex 30742
Amsterdam: Riverstaete, Amsteldijk 166, Amsterdam 1010.
Telephone 461844 Telex 11336



**Computing
Services
Association**

William Key & Partners Limited

CONSULTANT PROGRAMMERS MANCHESTER & YORKSHIRE



SALARIES
£3500 - £6000

Gemini Computer Systems Limited, with offices in London and Manchester, is the U.K. operating company of the CAP GEMINI SOGETI Group. The CGS Group employs over two thousand professional consultants in twenty-one countries throughout Europe and the Middle East. The range of services offered by Gemini in the U.K. includes Consultancy, Feasibility Studies, Hardware and Software Evaluation and Selection, Systems Design and Programming.

Gemini continues to expand in the North and wishes to recruit a number of experienced Programmers to work on a variety of interesting projects both in-house and on Client sites.

Current requirements are for Programmers with a sound educational background and any of the following:

- * At least two years' Commercial or Systems Programming experience.
- * IBM COBOL/PL1 experience and/or assembler level language.
- * Working knowledge of on-line or database techniques.

If your experience matches the above requirements and you feel you have the ability to work on your own initiative, Gemini is able to offer the following rewards:

- * Basic salary up to £6000 + profit sharing bonus.
- * Travel and subsistence expenses.
- * Free life assurance and permanent health insurance.

Interviews for the above positions will be held in Manchester or London.
To arrange an early interview, telephone Liz Segal on 061-834 2271 during office hours, or 061-828 5495 after 6.30 p.m. and at the weekend.

William Key & Partners Ltd., 504/508 Corn Exchange Buildings Corporation Street, Manchester M4 3DD

COMPUTER SYSTEMS ENGINEER MANCHESTER

KRATOS Ltd. manufactures the DS50 and DS300 ranges of data systems which provide real time processing of data generated by scientific instruments.

KRATOS now needs a COMPUTER SYSTEMS ENGINEER to be responsible to the Data Systems Product Manager for the specification, procurement, checking and installation of the system hardware.

Applicants for the post should have:

- * Sound knowledge and practical experience of mini-computers using high level operating systems.
- * Minimum of 2 years' experience of installation and/or commissioning.
- * A degree or equivalent in Computer Sciences.

A competitive salary is offered.

William Key & Partners Ltd. has been retained to fill the above post. Please write with brief details or telephone for an application form: Liz Segal, William Key & Partners Ltd., 504/508 Corn Exchange Buildings, Corporation Street, Manchester M4 3DD. 061-834 2271 during office hours, or 061-828 5495 at other times. Ref: CW 9608.

Computer Operator To £3500 p.a.

We have a vacancy for a male or female operator for our IBM 360/30 computer based in our Head Office at Purfleet. This is a 125K machine with transmission links to our mills in Lancashire and Cumbria. Two Shift working is involved alternately 7.00 am-3.00 pm and 3.00 pm-11.00 pm on five days per week, with occasional paid overtime.

At least one year's experience as an operator of a similar machine is needed, together with a minimum of a Grade 3 pass in 'O' level or a Grade 1 in CSE Maths. A starting salary of between £2,500 and £3,500 will be paid depending upon aptitude, age and experience.

Please apply in writing to the Staff Personnel Officer, Thames Board Mills Ltd., Purfleet, Essex. RM16 1RD. Telephone Purfleet 5355 Ext. 2337.



ON-LINE DATA BASE CROYDON

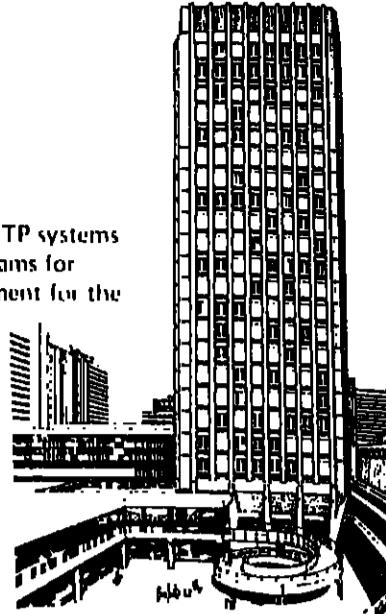
We are an expanding insurance company, developing two major TP systems for an IBM 370/138 using CICS and DL/1. The programming teams for these projects are now being established, and we have a requirement for the following DP personnel:-

SENIOR PROGRAMMERS

With three years' experience of COBOL/ASSEMBLER, and Leadership Potential.

PROGRAMMERS

With two years' experience using COBOL/ASSEMBLER. TP/Database experience would be an advantage but, basically, we are seeking staff who are capable of making a positive contribution to a growing organisation. If you are interested, contact our Personnel Manager, Mrs. Jean Knight, at the following address:-



Northern Star Insurance Co Ltd

Rothschild House, The Whitgift Centre, Croydon. Tel: 01-686 5678

REPRESENTATIVE SOFTWARE SALES

Extensive U.K. Travel

c. £10,000 p.a. earnings

SDI are the creators of the successful Systems Software products GRASP, GRASPV, FLEET, EPAT and REACH, which enhance the performance of IBM computers.

We are expanding our activities in the Systems Software market in Britain, where our products have gained recognition since 1968. We are now ready to gain maximum penetration of a highly promising and under-exploited market.

To develop this expansion in North London, South West England, Wales and the West Midlands, we wish to appoint a high calibre Sales representative with proven record of success in the data processing field.

You will be responsible for broadening our client base and exploiting every opportunity that arises within the developing United Kingdom market.

This is a challenging position, not one for a theorist. You will be the type of hardened professional, whose drive, enthusiasm and down-to-earth approach will make a positive contribution to SDI's success. Your results will be visible and well rewarded. Salary will be highly competitive and the sales incentive scheme offers the opportunity for high overall earnings. You will receive a company car.

Please call Simone Lester on 01-204 9433 for more details and an application form or write giving full career details and quoting reference GB/SR to:-

Malcolm White SDI GB
Masons House
Kingsbury Road LONDON NW9 9NG.



Urgently required in many areas:

CONTRACT COBOL PROGRAMMERS

for IBM, ICL and UNIVAC
COMPLEX COMPUTER SERVICES LTD.
84 High Street
Newport Pagnell
Bucks, MK18 8EG
Tel: 0808 810419

Oxford Medical Computer Centre

PROGRAMMER Scale 1/4

Salary:
Scale 1 £3,003 + 5% — £3,846 + 5%
or
Scale 4 £3,846 + 5% — £4,656 + 5%

A Programmer is required to complement a team producing real-time hospital systems in Oxford. The job will provide an excellent opportunity to gain experience in real-time programming. Knowledge of one or more of the following would be especially useful: CTI Modular One, DEC PDP-11, Real-time Systems, Database Systems, Hospital Computing. The job is on a fixed term contract until March 31, 1979.

For further details and application form please contact (quoting reference VB4/77) The Recruitment Officer, Oxford Regional Health Authority, Old Road, Headington, Oxford OX3 7LF. Tel. Oxford (0865) 64861, Ext. 265. Closing date for applications 27th September, 1977.



Mail Order Senior Analyst

Wiltshire £5500

Book Club Associates is the fast growing leader of the U.K. book club market and is jointly owned by W.H. Smith & Doubleday. We are highly dependent upon computer based systems and an experienced analyst is required in our expanding Management Services Department.

You will work on developing a variety of important commercial projects based on ICL 2970. You will ideally be of degree standard with some programming experience and at least 2-3 years systems work.

Conditions of employment are excellent as you would expect from a company associated with W.H. Smith—and general relocation expenses will be paid.

Write giving brief details of age, qualifications, experience and present salary.

Senior Personnel Officer, W.H. Smith & Doubleday, Greenbridge Road, Greenbridge Industrial Estate, Swindon SN1 1DQ.

Knight Wegenstein International Management Consultancy, of which Moiney's are a member Company, have been retained by a Major Corporation in Saudi Arabia to select and recruit the following Important Data Processing Personnel. The Corporation, is the Saudi Arabian Main Agent for the world's third largest vehicle manufacturer, having its headquarters in Jeddah. This progressive organisation has implemented a recruitment policy, which has encouraged the appointment of in excess of 50 experienced European Senior and Line Managers into the Company, who will direct its future development program.

DATA PROCESSING MANAGER

£15,000 p.a. Tax Free

The successful candidate will initially undertake the Feasibility Study, Development and Implementation of the computerisation of their large scale parts department. Ideally candidates should have had several years' experience in D.P. management including experience of a "cold start up" situation, site preparation, conversion from manual systems, and the training and selection of staff. This experience would also be advantageous.

SENIOR ANALYST/PROGRAMMER

£12,000 p.a. Tax Free

The successful candidate will assist the newly appointed Data Processing Manager in the tasks identified above. This appointment will require a person with at least seven years' experience in D.P., three of which should have been in a Systems Analysis and Development environment. A sound knowledge of IBM Hardware is a pre-requisite of this appointment.

CONDITIONS OF EMPLOYMENT

In addition to the salaries identified, both these appointments carry the following additional benefits. Free furnished accommodation, Company Car, Fare Paid annual leave in U.K. for the whole family, free Medical expenses, 4 weeks' annual holiday.

Please send your C.V. to Rod Evans (Director of Personnel)



Mouncey & Partners Limited (Recruitment Services Division)
York House, Empire Way, Wembley, Middlesex HA9 0PA
Telephone Number: 01-903 4901

Shift Leader and Operator

Top Rates London

Our client has exciting plans for the future, including the development of a Trans-Atlantic circuit leading to a wide diversification of international computer usage. As the Computer Services Department expands to take on these challenging projects the prospects for promotion will be good.

The equipment consists of an IBM 360/50 with a megabyte of core. The work involves setting up computer runs and print-outs for commercial and technical applications. The people we currently need are:

**SHIFT LEADER up to £4,250 p.a.
+ 25% shift allowance.**

You will need 3/4 years' DP experience, including OS MVT/HASP and preferably DOS. Age probably mid 20s.

**OPERATOR up to £3,500 p.a.
+ 25% shift allowance.**

A minimum of 1 year's experience, operating in a similar environment. Age probably 18-22.

Both these opportunities are for men or women with the ambition to succeed and the ability to work under pressure. Please write in complete confidence, with full details about your age and experience, to:

J. Bye (Ref SLO/CW), Lockyer, Bradshaw & Wilson Ltd., North West House, 119/127 Marylebone Rd, London NW1 5PU.

Senior Programmers

To maintain the expanding demands on the installation by Group users, Courtaulds I.B.M. Bureau at Spaldon, near Derby, seeks a number of Senior Programmers having approximately two years' experience in ASSEMBLER and/or COBOL and/or PL/I.

The installation is currently being up-graded to 2 x 370/125 with 3340 drives and DOS/VS/GRASP.

Applicants should be prepared to undertake an initial programming assignment of some two years following which there will be opportunities for persons of appropriate ability to transfer into systems work if they so wish.

Progressive salary based on experience; relocation assistance where necessary and other large-company benefits.

Please write to the Administration Officer, HQ. Depts. (HP/102), Courtaulds Ltd., P.O. Box 16, Coventry, or for further information ring Alan Wright at Spaldon on 0322 81422 extension 2237.

COURTAULDS

PLAN YOUR CAREER WITH PRESCOT

ENGLAND £3,000
AUSTRALIA to
SOUTH AFRICA £10,000

Careful planning often makes the difference between the successful and the not so successful computer career. Prescot Computer understand this because a specialist in overseas computer recruitment and the selection for an overseas post requires extra care by Prescot, employer and employee. We use the same principles of care whether U.K. only or overseas employment is involved.

We currently wish to interview Programmers, Systems Analysts, Analytical Programmers and Consultants for broad range of clients in England, Australia and South Africa. Salaries range from £2,000 to £10,000 p.a. If you are interested, why not telephone Chad Stolper at (01) 242-2142 for an informal discussion. Alternatively if you prefer write to him at:

Prescot Computer Limited
6 Glanammon Square
London WC1A 1LP
TELE 23110



LOCKYER, BRADSHAW & WILSON

LIMITED

HERTS., BEDS. & BUCKS.

SYSTEMS PROGRAMMERS to £5,500
New system development work — Assembler exp. essential,
knowledge of SHADOW an advantage.

TECHNICAL PROGRAMMERS to £5,000
Fortran experience associated with Civil or Structural project work.

ANALYST/PROGRAMMERS to £5,000
To assist in installing new production control system. Manufacturing application experience required.

VACANCY LIST
Free list of vacancies in Herts, Beds, Bucks, and North London areas.

Contact: Roy Brockenhurst, St. Albans 81373

Blue Arrow House, 3 Hollywell Hill, St. Albans, Herts.

Industrial Estate, SWINDON SN1 1DQ

16 Bedford Row
London WC1R 4EB
01-242 9356
Telex 21120



Specialists since 1971
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● Paris

Senior Programmer/Analyst

c£8,500

Our client is an International firm of Chartered Accountants who require a Senior Programmer/Analyst for their Paris office. He/she will work within the Computer Audit department alongside a small multinational team of accountants responsible for computer audit work throughout Holland, Belgium and France. The function of this additional team member will be to provide technical expertise and support in the running of computerised accounting systems. He/she must be able to work closely with both professional staff and clients in identifying problem areas within complex computerised accounting systems. Being the only DP professional in the team, he/she must be prepared to carry out varied tasks ranging from writing simple one-off programs designing large interrogation systems, and will also be expected to provide DP training and system control guidance to professional staff.

Candidates for this position must have several years' experience using IBM COBOL under DOS and/or OS together with some involvement at a systems analysis level, preferably on accounting systems. Additional experience using other hardware and languages would be useful. Although fluent French is not essential initially, candidates should have a basic knowledge of the language and the ability to reach fluency quickly — they will be actively encouraged to do so. They must also be willing to undertake considerable travel within Europe. Ref: 445/CW/ Sharon Matthews.

● Middle East

S. Systems Analysts — Kuwait

£12,000+ tax free
Project Leader — Tehran

\$36,000

Large IBM 370 installations. Long term career positions and contracts. On-line systems — OS, IMS etc.

The KUWAIT client is a major trading company with sales of over \$250m. New IBM hardware is being ordered (370/145 and larger) and an ambitious systems plan is being developed. Top rate Systems Analysts are needed to form the teams. Ideal candidates will be graduates with a sound record of achievements in their careers to date. They should have developed on-line accounting and inventory systems using large IBM computers. These are long term career appointments and there is a preference for married candidates, who would be expected to visit Kuwait before accepting a position. The remuneration package is exceptionally good and includes free accommodation and a car allowance. Ref: 721/CW/Neville Allington.

The TEHRAN vacancy is with an established consultancy and offers a contract of 1 year (renewable). The Project Leader will be responsible for a small team which will develop a large personnel data base system, to be implemented on large IBM hardware. Candidates should have significant systems experience using large IBM hardware, and experience of IMS and personnel systems would be a distinct advantage. Two Systems Analysts are also required for the project at salaries of about \$30,000. Single candidates are preferred. Ref: 444/CW/ Sharon Matthews.

To apply for any of the above positions or for further information, please telephone or write to the Consultant concerned on 01-242 9366. If it would be more convenient to telephone in the evening, the telephone numbers are:
Neville John — Farnborough (Kent) (66) 52017. Roger Allington — Berkhamsted (04427) 2299.
Renda Nute — 01-874 6372. Sharon Matthews — Bitterley (02774) 22351.

● Scientific Oriented Programming

£3,000-£6,000

The vacancies are based in Reading (Berks) with opportunities to work on site in the UK or overseas. Candidates must have a degree or equivalent qualification in Engineering or Mathematics as well as several years' systems and programming experience, preferably on ICL Hardware. All applicants must be well spoken and presentable with an awareness of a customer environment. Our clients are a Software House of international standing, offering first-class conditions and excellent prospects. Ref: 570/CW/ Renda Nute.

● Holland

There are currently a number of opportunities in Holland, some of which would apply specifically to Dutch Nationals or Afrikaans speaking personnel where this would be more important than the actual type of computer experience. Opportunities for travel within Europe also exist with some of these appointments. Specific requirements include:

Communications

Fls. 30-45,000+

Most of the projects are Mini based using DEC, Data General, Hewlett Packard or Computer Automation hardware and include total systems supplied on a Turnkey basis with both hardware and software maintenance after implementation. Application areas include Process/Industrial Control, Telex, Message and Packet Switching, F.E.P., Networks and On-Line/R.T. Commercial Systems. Programming experience is essential and for the more senior appointments Supervisory ability or Design and Implementation experience would be required. Ref: 390A/CW/ Roger Allington.

Commercial

Fls. 35-50,000+

In addition to the Mini based Commercial requirements, we also wish to recruit a SYSTEMS CONSULTANT with sound experience and knowledge of Inventory/Stock Control applications, preferably using IBM hardware. Specific responsibilities would include Analysis, Specification and Implementation. Ref: 390B/CW/ Roger Allington.

Freelance

Fls. 1,100-1,300 per week

Programmers and Analyst Programmers are required for 3 month+ contracts, primarily for IBM and Honeywell installations in both application and software areas. Data base or Data Communication experience and/or fluency in Dutch or Dutch Nationality would be of particular interest for some of these requirements. Ref: 390C/CW/ Roger Allington.



Scientific Programmer

c. £4,500

A unique opportunity has arisen within a small research unit of this large international company for a scientific programmer to join the data processing team.

The successful applicant will be involved in statistical analysis, maintenance and enhancement of existing programming systems, use of data-base systems and the writing of general utility programmes.

Applicants for this post should enjoy a variety of work essentially without supervision, and have a good knowledge of at least one scientific

programming language, preferably Fortran. It is unlikely that this knowledge could be gained in less than eighteen months. Exposure to file-management, data-base or statistics would be an advantage.

Benefits include Christmas bonus, four weeks holiday, non-contributory life assurance, sickness and pension scheme.

Please write with brief career and personal details to: Jane Jones, Personnel Department, Mars Group Services, 132-138 Feltham Road, Slough, Berkshire SL1 4PY. Tel: Slough 30721.

Borough Treasurer's Department Programmer

Fls. 2/3 £2529 + £3282 + £312 salary supplement + Phase 2 supplement

The Council operates an ICL 1801A with tape and discs. Candidates must be experienced in COBOL.

Assistance will be provided with removal expenses, and provision of housing accommodation, in approved cases.

Application forms and job descriptions available from the Personnel Officer, Town Hall, Didsbury, Municipal Offices, St. James Street, Ashton-under-Lyne, BB1 1PQ, to whom they should be returned not later than 22nd September, 1977.

Conciliation of Senior Officers or Members of the Council will automatically disqualify.

Borough of HYNDBURN

Brand New Chevy Vega

\$2686



That's roughly £1,550.

Your salary could be £13,500 - 20,000 dollars p.a. £7,750 - £11,494 p.a. when we went to press. That Chevy shows how far that kind of salary can go.

That kind of salary could be yours. We need 20 people for 6-12 month assignments in the American Mid West with leading U.S. companies.

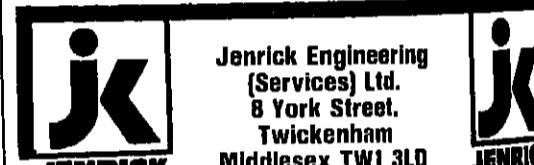
We want Systems Analysts and Programmers with at least 4 years' experience. You must have IBM know how.

Travel to and from the U.S. is free. Accommodation will be arranged. People without family ties are preferred.

Your first step to the golden West is to lift the phone, dial 021-643 4577 and talk to Roger Radford.

R Project Recruitment,
Temple House, New Street,
Birmingham.

An associate company of Gould Computer Systems Ltd.



SOUTH OF LONDON

Our client, a Blue Chip Company where success in existing vacancies within the management services function will lead to more responsibility and opportunity, seek its following:

Seven Senior Systems Analysts	5-6.25K(TW125)
Five Systems Analysts	4.5-5.5K TW125
Five Senior Programme Designers	5-6.5K TW125
Three Programme Designers	4.5-5.5K TW125
Six Specialist Senior Programmers	4.5-5.5K TW125
Four Programmers	3.5-4.2K TW125

Each position is clearly defined into its own discipline.

Specialists in Manpower to the Engineering Industries

DATA GENERAL NOVA 3D + RDOS

William Clowes & Sons (Beccles) Ltd. are installing a dual Data General Nova 3D computer system with 96MB disks, magnetic tape and tape drives. The system is to be used for commercial input/output and on-line VDU's. The system is to be used for commercial applications using a Fortran based suite of programs and tapestitch applications using the RDOS operating system. To drive an Autodoc phototypesetter.

A computer person with at least 18 months solid computing experience and with some programming knowledge is required, whilst those with experience in data processing and tapestitch applications using the RDOS operating system will be an advantage.

An experienced programmer is required to take charge of the Polytechnic team of three programmers. Applicants should hold a degree or equivalent, and have good experience of GEORGE II and MAXIMOP. The Polytechnic has an ICL 1803T which is currently being enhanced.

Salaries and conditions of employment are commensurate with the experience of a large group of companies.

Applicants should in the first instance write or telephone for application form to:

The Personnel Officer, MCGORQUADLE BOOKS LIMITED, 100 East Hill, Colchester CO1 2QN. Telephone 0206 62321.

Further particulars and application forms from:

The Administrator, Oxford Polytechnic, Oxford OX3 0BP.

A member of the McCorquade group of companies

THE COMMISSION OF THE EUROPEAN COMMUNITIES

Joint Research Centre - Ispra Establishment (Italy)
IS SEEKING for the Informatics Division:

REF. 538:

A SCIENTIST

with university degree or diploma in INFORMATICS.

He will be charged with the development of a PACKET-SWITCHING NETWORK interconnecting heterogeneous computers.

At least 3 years of professional experience in systems development, as well as a thorough knowledge of at least one assembler and one high-level programming language, are essential.

Experience in the implementation of COMPUTER NETWORKS or TELEPROCESSING FUNCTIONS in operating systems would be advantageous

To carry out these duties, a satisfactory knowledge of English is necessary.

REF. 539:

A SCIENTIST

with university degree or diploma in ENGINEERING and/or COMPUTER SCIENCE.

He will be charged with:

operation of the PROGRAM LIBRARY; the related information service, research activity on PROGRAMMING and DOCUMENTATION TECHNIQUES for application software;

representing the Program Library in European study groups.

A good SCIENTIFIC BACKGROUND in general, as well as knowledge of technical-scientific applications of computers and of SOFTWARE PORTABILITY and DOCUMENTATION problems, are essential. Experience in computerized information services would be advantageous.

To carry out these duties, a thorough knowledge of English is indispensable. A satisfactory knowledge of French and/or German is desirable.

Recruitment criteria, based on the staff regulations and salary scale applicable to temporary agents of the European Communities:

Temporary contract, up to five years, with possibility of renewal - Salary according to age, qualifications and experience.

Other benefits include family and expatriation allowances.

Only nationals of the Community Member States may be considered for the above posts.

Applications, WHICH MUST CLEARLY SPECIFY THE REFERENCE OF THE POST APPLIED FOR, should be sent to the following address, together with a detailed curriculum vitae and copy of degree or diploma:

JOINT RESEARCH CENTRE, Administration and Personnel Division, I-21020 ISPRA (VA), Italy
WITHIN ONE MONTH OF PUBLICATION

The candidates are requested to apply separately for each post they may intend to compete for.

REAL TIME MINI DOES YOU GOOD

(Like anything up to £8,000 — plus)

Anything you've ever been up to with Real Time Mini could get you up to something even better this autumn.

And no hanging about.

Because, if you've had any Real Time Mini experience at all — be it programming or S.A. — around at our place you're a wanted man or woman.

(Naturally, mind, the more you've had, the more you're wanted — and the more you'll get.)

You can go pretty well anywhere you like, too. London, Home Counties or Provinces.

And to whatever kind of company you'd like to work for. Manufacturer, consultancy or user.

Herewith, a few examples — just examples. Don't worry if what you want isn't here in this advertisement. You'll find a lot more where these came from — upstairs at Real Time Mini's place.

If you have experience on any type of mini computer, DEC, Ferranti, DG Nova, SPC 16, ITT3200, etc., using an assembler-language, and have experience in one or more of the following fields, we'd like to meet you.

Message Switching, Communications, Real Time Process Control, Radar Control, Flight Simulation, Word Processing, Micro Processing, Banking or Commercial.

Those with experience of Coral, RTL2 or DEC operating systems, would also be of particular interest to our many clients.

Phone 01-636 6073 or 01-323 2795. Ask for Beryl McLaren. Interview as soon as you can make it.



79 Great Titchfield Street, London W1



A UNIQUE OPPORTUNITY IN THE MIDLANDS

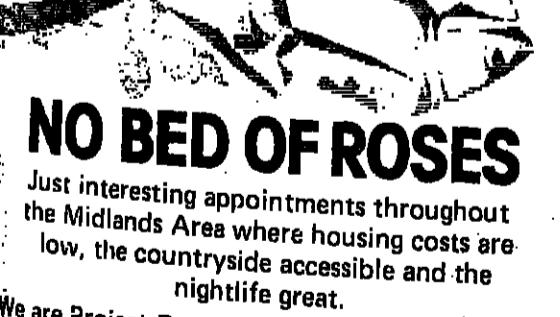
To join a dynamic company marketing DEC and other minicomputers on a turnkey basis.

We seek to recruit an Analyst / Programmer with at least 4 years' experience in commercial applications. Experience of, or enthusiasm for, pre-sales work will be an advantage.

Salary £5-8 + car + benefits.

Please write with details to:

Andrew Reeves, Managing Director
CBSS CONSULTANTS
111 Leekfield Street, Birmingham B18 6RZ



NO BED OF ROSES

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

TECHNICAL MANAGER

LANCASTER GATE

A Technical Manager is required by a computer service company with an established software product. This is a new position in an expanding organisation and offers the successful applicant the opportunity to move into a management position from a programming background.

The new Manager will take responsibility for the technical department, particularly for the redesign and continued enhancement of a sophisticated software package, written in BAL and FORTRAN. He/she will be capable of the planning and control of large projects and new systems development. Ideally you will be educated to degree standard, possibly with some knowledge of statistics; a sound experience of IBM software, preferably DOS or OS.

The Company, a subsidiary of a major brewing group, offers a good employment package, including 22 days' holiday and a newly established bonus scheme. Attractive offices are situated conveniently close to both Paddington and Central Line Stations.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 5868

c. £5500

Computer Professionals. You could be a teacher in a class of your own

(and help develop the forefront of training technology*)

Now you have attained more than a degree of proficiency in your computer field, perhaps you'd like to diversify a little and teach others what you know about programming, operating or maintenance engineering.

If so, read on, because Control Data Institute — the educational service of Control Data Ltd., world leaders in all aspects of computer products, systems and services — are looking for people aged 24+ with at least 2 years' experience in the computer industry, to become Instructors.

You can earn up to £5,000 p.a. initially, with progression to higher scales.

We're specifically looking for the following:

COMPUTER PROGRAMMING INSTRUCTORS

COBOL experience essential, plus IBM Assembler/ICL PLAN or other low level language. RPGII would be advantageous. Vacancies exist in London, Southampton and Manchester and you

Phone Susan Robinson on 01-637 2171
for a personal details form, or send your
brief C.V. to:

Tony Fairfoot
Control Data Institute
77 Wells Street
London W1P 3RE



We are just now installing our
multi-media individualised training
system, and will shortly incorporate
Computer Based Education
techniques.

This anonymous software ad
was written by someone who answered
our earlier anonymous software ad.

Back in March, Brian Ashworth noticed an ad in Computer Weekly. Its headline said: "The Software Mystery Tour."

Intrigued, he read on.

He didn't learn much, other than that the Company was "highly successful and technically orientated" and that salaries could be in the range £7000-£8000. But the temptation to go along for an interview and find out what the jobs were and who the Company was proved irresistible.

He subsequently joined us.

A little later on, when we asked him what he thought about software work with us, this is what he said:

"I believe our department can offer potential staff a more complete spectrum of work than any other company. Mini computer, micro computer, application packages,

Brian

standard software, compilers, operating systems, techniques and specialisms. The disciplines involved in a large software department, the career development opportunities that are available, the potentiality for line management or remodelling 'on the technical side'—all these contribute to a good career. If you add to this the fact that... (our Company name) is in the forefront of its own areas of development, then what more can any computer professional want?"

If you're a software professional, earning more than £4000, and you're as intrigued as Brian was, there's an easy way to find out more.

Just leave your name, address and phone number with Norman Brown on 01-437 9261 or write to him at Austin Knight Limited, 20, Soho Square, London W1A 1DS.

The Company will soon be in touch with you.

H.P.S.L. H.P.S.L.

FREELANCE PROGRAMMERS
IBM PL/I OS
IBM COBOL OS/VS2
ICL PLAN

H.P.S.L. H.P.S.L.

COBOL CONTRACTS
IBM OR ICL
UK & EUROPE



FREELANCE PROGRAMMERS
IBM and DG
COBOL, PL/I, BAL,
DOS/VS, CICS, or DL/1
BELGIUM & MANCHESTER
Ring 061-969 4815

Urgently required for long contracts in the Midlands

Tel. Amersham (0240) 22201

Freelance Programmers

We can offer
*Long and short term contracts
*Prompt payment
*Tax advice
*Work in UK and Europe



THIS LACK OF STAFF IS GETTING SERIOUS
Telephone Les King up to 8 p.m. each evening or write to
Modem Computer Services Ltd FREEPOST London SW11 6BR 01-228 220

MODEM
Computer Services Limited

LIVERPOOL

SALARIES NEGOTIABLE AND HIGHLY COMPETITIVE

MAJOR PROGRAMMING OPPORTUNITIES AT ALL LEVELS, ONE OF BRITAIN'S LARGEST FOOD GROUPS

Our clients are shortly to install new Honeywell hardware at their site in North Liverpool. The equipment will consist of a dual Honeywell 6605 system supporting approximately 44 Level 6 machines in locations throughout Great Britain. They are currently involved in development of sophisticated integrated systems using the latest Honeywell hardware and software including TDS and IDS. Our clients now require additional people to join their application project teams.

DESIGNERS/PROGRAMMERS

A wide range of programming skills are required for this exciting project including Programmers (with 12 months' plus experience), Senior Programmers and Design/Programmers. Applicants should have experience of one or more of the following:

COBOL (Honeywell preferred)
Assembler (Level 6)
G. Map

The positions are based on the outskirts of Liverpool within easy access to coastal areas and the Lake District (relocation expenses will be paid where applicable). Initial interviews will be held in Manchester, Birmingham and London.

CONTACT: David Wade, 061-833 0676.

Ref. No. 77/09/11

SPECIALIST COMPUTER RECRUITMENT LTD.

BIRMINGHAM 021-236 3781 FREEPOST

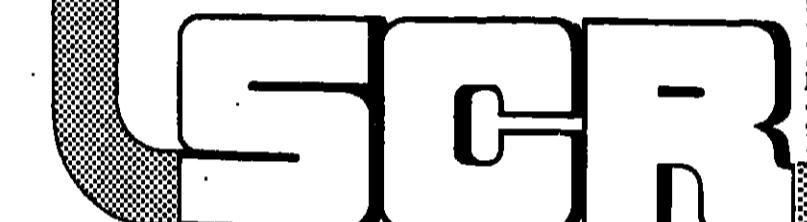
Freepost, Equity and Law House, 35-37 Great Charles Street, Queensway, Birmingham B3 2BR

MANCHESTER 061-833 0676 FREEPOST

Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 8BD

LONDON 01-935 0671 FREEPOST 6

Freepost 6, 102, Blandford Street, London W1E 1JZ



COBOL OR PL/I

City or Essex



3½% Mortgage
Salary to £6,000

A major U.S. International Banking Corporation is seeking a variety of Analysts and Programmers with IBM OS or DOS backgrounds. Programmers should have not less than 2 years' solid COBOL or PL/I with sound JCL and Utilities experience.

Successful candidates are likely to demonstrate ability to develop programs and systems standards is essential and any experience related to Banking will be considered advantageous.

In addition to a subsidised mortgage and above average starting salary our client offers numerous other worthwhile benefits including non-contributory pension and subsidised Restaurant facilities.

These positions will primarily appeal to applicants with long-term career objectives within a highly professional environment which offers technical and career advancement prospects beyond the limits of typical D.P. installations.

Ref: 40/1

CONTRACT PERSONNEL

Overseas & U.K.

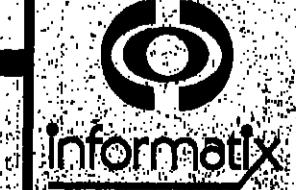


Weekly Rates to

Amsterdam	£360
Rotterdam	£350
Brussels	£325
Dusseldorf	£400
C. London	£220
N. London	£180
W. London	£160
Berkshire	£150
Hants	£140

Ref: 40/3

Telephone: 01-409 0468 until 7 pm



IMS ANALYSTS & PROGRAMMERS

City & W. London

Salary to £7,500

An important client — leaders in IMS development are expanding several of their project teams in both the City and West London and require experienced Analysts and Programmers with implementation expertise involving IMS under O.S. and preferably knowledge of T.S.O. Preferred languages are Cobol, PL/I or Assembler and any background in Database as experienced programmers.

Exposure to other T.P. Monitors will be considered in lieu of IMS and training will be given where appropriate.

In addition to excellent starting salaries our client offers exceptional fringe benefits and the prospect of rapid advancement is a realistic probability within this very professional D.P. department.

Interviews will be held throughout September and successful candidates will be made offers of employment within 10 days of interview.

Ref: 40/2

ANALYSTS & PROGRAMMERS

London and Overseas

Salary to £7,000 +
Per Diem Allowance

An established U.K. Software House with extensive overseas operations is planning a major expansion programme and requires a number of Systems Analysts at various levels as well as experienced Programmers.

Ideally candidates shall have solid IBM OS backgrounds and programmers will demonstrate experience in ANS COBOL (BAL would be an additional asset). In addition any experience within a Mini computer environment would be considered an advantage. In depth exposure to OS/360 and Utilities is a prerequisite.

These positions will appeal to applicants free to travel extensively overseas and to a lesser degree in the U.K. Very generous allowances will be paid during such periods. These positions are permanent and pensionable and candidates seeking long term career advancement will find considerable scope and opportunity within this progressive company. Interviews will be held in London throughout September and offers will be made to successful candidates within 1 week of interview.

Ref: 40/4

Avon House, 360-368 Oxford Street, London W1N 9HA
(Opposite Bond Street underground)
Telex 28800 ALPRESS LDN

Senior Programmers and Programmers

Salaries up to £5,200 p.a.

Bexley's new installation creates interesting and rewarding opportunities

The Bexley London Borough is looking for Senior Programmers and Programmers who would welcome the challenge and development potential of a new installation. Our client is soon to commence an extremely interesting phase of development by installing an IBM 370/138 under DOS/VS as their first in-house machine. They will be developing a wide range of application areas but primarily, they will be creating a database for their Central Accounting System. They now have vacancies for:

Senior Programmers

With sound experience of IBM COBOL. If you have additional knowledge of CICS, DL1 and have worked in DOS/VS environment, then this would be of particular interest.

Programmers

Who are competent in writing COBOL programs. If you have not worked in an IBM installation, this is an ideal chance to gain experience of another manufacturer's hardware. Salaries will be negotiable according to your experience and a generous range of benefits include up to 25 days holiday plus 7 statutory days, and relocation assistance where appropriate.

Find out more by contacting Marilyn Black, quoting reference No. 717.



John Goldsmith (Computer Recruitment) Limited
16 Buckingham Palace Road, London SW1
Tel: 01-828 5366

JOHN GOLDSMITH (Computer Recruitment) Ltd.

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

SENIOR PROGRAMMING STAFF

MIDDLESEX

A major manufacturing and distribution Company to the west of London is seeking senior programming staff to supplement an existing programming team. The Company has recently upgraded their hardware and is currently developing several new systems using the latest IBM software.

A Chief Programmer is required to manage the programming team. A proven track record; capable of scheduling work, meeting deadlines and ability to communicate with senior management is essential.

A Systems Programmer or experienced Assembler Programmer is required to eventually take full responsibility for systems software.

Salary for these positions will present no problems for the successful applicants and the benefits package is commensurate with that expected from a large international Company.

COBOL PROGRAMMERS

New Department

£3800-£5500

C LONDON

Excellent opportunities have arisen for Programmers seeking a position within a new team in a professional environment.

The company, part of an international group, is a leader in its field. Successful applicants will be engaged on extensive development work on an on-line commercial project. Training will be given and those appointed will be encouraged to accept increasing responsibility and gain progression towards design and analysis in the future.

Candidates should be able to offer 1-4 years COBOL experience, as appointments will be made on a level appropriate to individual experience.

The company has a range of fringe benefits including four weeks annual holiday and flexitime.

SENIOR ANALYST/PROGRAMMER

3 years' experience

LONDON

c £5500

This position offers positive career prospects to a programmer or analyst/programmer seeking a greater challenge, more advanced technical experience and additional responsibility.

Having successfully computerised a number of accounting and management information systems, the Company is now developing a large on-line system to assist with the production and distribution of a wide range of its products. Working within a small specialist team the successful candidate will have the opportunity to broaden his/her experience on this unusual application using the latest techniques and equipment.

Applicants should have around three years' programming experience and be keen to participate in analysis activities involving considerably user contact.

This is a senior position within an expanding organisation where conditions of employment are excellent and accompanied by a range of fringe benefits.

PROGRAMMER

to £8,000

S. E. LONDON

This is an interesting and challenging opportunity for an experienced programmer to join an active department with an enthusiastic approach to computing.

There will be an initial period, during which the person appointed will acquaint themselves with the installation and the company business. After this period they will be encouraged to work on their own initiative often unsupervised. They will become involved in all aspects of systems development and will be largely responsible for the smooth running of current live systems.

Candidates will be able to offer programming experience, preferably using COBOL, coupled with some exposure to basic systems analysis.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 0JL



WE SEEK SYSTEMS AND PROGRAMMING PROFESSIONALS FOR EXPANDING AND PROGRESSIVE OPERATION

ANALYSTS, SENIOR ANALYSTS, PROGRAMMERS, SENIOR PROGRAMMERS

BACKGROUND

A record of continuous improvement is the keynote of this Group which has an unparalleled profit record spanning 40 years.

Our Engineering and Production reputation is highly respected in the industry, and so, in recent years, is its practical application of computer systems. Existing systems, batch and T.P. based, include Engineering (DBOMP), RPS, Inventory Control, Finance and Parts.

THE COMPUTER

We currently use a 370/145 (1 mb), using 3330 drives, VDUs and terminal printers are used throughout the Company. This is to be replaced in January, 1978, by a totally new configuration based on a 370/148 (2 mb).

METHOD OF WORK

You will be a member of one of our key project teams developing and implementing systems for production, Purchasing and Corporate Finance. All members of our project teams are encouraged to become involved with our user clients not only during requirements analysis but all stages of development.

by writing in sufficient detail as to make an application form unnecessary to.—
PERSONNEL MANAGER
COLES CRANES LTD.
SUNDERLAND SR4 6TT

Or telephone Roy Smith (0783) 58281, extension 326, to discuss details and arrange an early interview.

CAREER PATH

This is a solid career opportunity offering experience, and training where relevant, in a wide range of systems in a dynamic business environment. There are excellent promotion prospects.

CANDIDATES

Applicants should have been involved in the successful implementation of at least one major project, ideally utilising one or more of the following:

DL/1
DBOMP
CICS/VS
PL/1

In the event that you have not been involved with any of the above yet have SOUND ANALYSIS EXPERIENCE or have programmed in COBOL we are still interested. Salaries are highly competitive, relocation expenses are available where applicable. Working location is in Sunderland, easily accessible from Durham, Newcastle, Chester-le-Street and Washington New Town. The area has some of the best countryside and coastline in England.



MANCHESTER OPERATIONS CO-ORDINATOR SALARY to £4,000

We are retained by our clients, a well established and successful Computer Bureau, to recruit an operations professional. The ideal candidate should already hold a senior position within an operations department and have the ability to survive in a pressurised environment.

Experience in multi-programming and a knowledge of Honeywell equipment would be a distinct advantage but is not essential.

Candidates should have:

- * a minimum of 4 years' experience in operations.
- * proven experience in scheduling and control.
- * the ability to streamline and enhance data control systems.
- * the ability to liaise direct with users.

Our clients offer the successful applicant complete responsibility of the data control and data preparation areas of this expanding Bureau, and many opportunities for improving the existing department's efficiency.

Excellent terms of employment apply including 4 weeks' holiday, fringe benefits and relocation expenses where applicable.

CONTACT: Tony Deane, 061-833 0676, Ref. 77/09/12.

ON-LINE CAREERS IN THE MIDLANDS to £4,800 p.a.

A progressive career awaits you, working for a multi-million pound turnover group based in the Midlands.

Our client has an impressive data processing commitment involving extensive usage of on-line application development, based on ICL equipment.

Opportunities now exist for a

SYSTEMS ANALYST/ PROGRAMMER

Candidates should have:

- * Systems design or implementation experience coupled with a programming background.
- * Experience of commercial applications, ideally in an ICL environment.
- * Above all a true desire to progress and respond to the challenge of working in a professional and well managed environment.
- * Relocation expenses, excellent working conditions, low cost housing and other large company benefits including discount on company products, are offered to the successful candidate.

CONTACT: Cathy Tracey on 021-236 3781, Ref. 77/09/13.

SPECIALIST COMPUTER RECRUITMENT LTD.

BIRMINGHAM 021-236 3781 FREEPOST

Freepost, Equity and Law House, 35-37 Great Charles Street, Queen'sway, Birmingham B5 0BH

MANCHESTER 061-833 0676 FREEPOST

Freepost, Com Exchange Buildings, Corporation Street, Manchester M4 8BD

LONDON 01-925 0671 FREEPOST 6

Freepost, 6, 103 Blandford Street, London W1E 1JZ



NEW D.P. CONCEPT MAJOR U.K. GROUP MIDDLESEX

Our Clients are not only one of the largest and best known U.K. companies but have also become established as one of Britain's leading specialist organisations in the field of data communications. They have many years' experience in the supply of systems and equipment to provide more efficient and more cost effective teleprocessing.

They are about to introduce into the U.K. a revolutionary new D.P. concept in the field of communications and distributed intelligence. This product was recently announced in the U.S.A. where it had outstanding sales success largely due to:—

- ★ Highly sophisticated and well proven software.
- ★ Considerable investment in development.
- ★ Excellent support and publicity back-up.
- ★ A proven market place.

We have been retained to recruit key staff qualified to take part in the launching of this new product.

SALES EXECUTIVES AND PRODUCT MANAGER

Earnings £10-12K + Car + Benefits

High calibre sales executives are required to form a new team to develop this market. The following experience is required:—

- ★ 3-5 years' experience of selling computer products with a major computer/terminal manufacturer.
- ★ Experience in teleprocessing.
- ★ Ambitious and self-motivating.
- ★ Experience of IBM hardware/software is highly desirable.

The Product Manager should have similar experience to that of the Sales Executives but in addition, will also have the ability to support customers in the implementation of their systems. The successful candidate will be expected to travel extensively, both in the U.K. and Europe. In this case, 3-5 years' experience with IBM hardware/software is essential.

SENIOR SYSTEMS SERVICE ENGINEER

Salary £5,500 + Car + Benefits

Our Clients also require an experienced Systems Service Engineer to lead a team responsible for the installation of the first systems shipped and also to set up his own service department.

He will need to formulate a training plan for this department as well as providing normal service requirements. He will also support the sales division at marketing demonstrations. The successful candidate will be expected to undergo a number of weeks' training in the U.S.A. Experience in servicing IBM compatible hardware will be a great advantage.

Please contact the Advising Consultant quoting the appropriate reference number for further information regarding these excellent opportunities.

Ref: CW/19

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**TREESIDE POLYTECHNIC COMPUTER CENTRE
PROGRAMMER ANALYST
£4,000-£5,000**

Applications are invited for the above posts. The Computer Centre provides a service to the whole Polytechnic, and is planning to install a large modern computer in the near future. The work to be undertaken will include system programming and the development of applications software for the Administration, the Library and the Administration. Programmer Analysts should normally be graduates or equivalent educational standard and probably have two years' practical experience.

The starting salary will be at an appropriate point on the scale T1/8 £1,608-£2,415, inclusive. Applications should be submitted by April 21 — £2,362. A progressive career structure operates within the scale. For graduates maximum scale will be T2 £2,415-£3,223.

Application forms and further particulars may be obtained from the Assistant Secretary (Academic), Treeside Polytechnic, Tredegar Road, Tredegar, Blaenavon, Gwent, CF3 7LG, to whom they should be returned as soon as possible.

**UNIVERSITY OF LIVERPOOL
Department of Physics**

The Department operates an IBM 360/65 computer and requires a COBOL programmer to work on the accumulation and analysis of High Energy Physics data. An opportunity exists for a

**Young Physicist
to £5,500**

To assist in this work. A degree in Physics and a good honours degree are required. The appointment will be made according to age, qualifications and experience, on the scale for Experimental Officers up to £4,811 p.a. or Senior Experimental Officers up to £5,827 p.a.

Application forms may be obtained from the Registrar, The University, P.O. Box 147, Liverpool L69 3BX. Quota Ref. RV/638/CW

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£5-£6,000**

We need experienced people for our Mini and Micro based business systems. If you are well versed in real time commercial applications and can handle projects from start to finish call us at 01-373 4834, ask for Leo Schelner Computer Application Research.

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to £5,000**

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**Programmer
£5,000**

ENFIELD/BIRMINGHAM

Five COBOL programmers, preferably with large machine experience, are urgently required by this medium sized with its service bureaux having HHC equipment for both their Enfield and Birmingham offices. Flexible, subsidised car and 4 weeks hols.

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An IBM COBOL programmer (OS or DOS) is required urgently by this Consultancy using an IBM 370/168 computer. Major applications include stock control, bought ledger and manufacturing systems using a linked System 32 computer.

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A profitable Service Bureau of long standing has need of a D.E.C. programmer with on-line and PDP RSTS experience using BASIC. Here is an opportunity to grow with a growing firm.

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A major food group situated in W.W. London, engaged in the expansion of its central systems department. Commercial sysys (preferably with on-line experience) are requested to apply for this newly created position. Excellent prospects.

**Project Leader
c£6,500**

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A major paper manufacturer with an excellent record of growth and a modern factory installation is keen to engage a Project Leader to take charge of a small team. You must know COBOL thoroughly and have manufacturing application experience. Top perks.

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A major food group situated in S.W. London, engaged in the expansion of its central systems department. Commercial sysys (preferably with on-line experience) are requested to apply for this newly created position. Excellent prospects.

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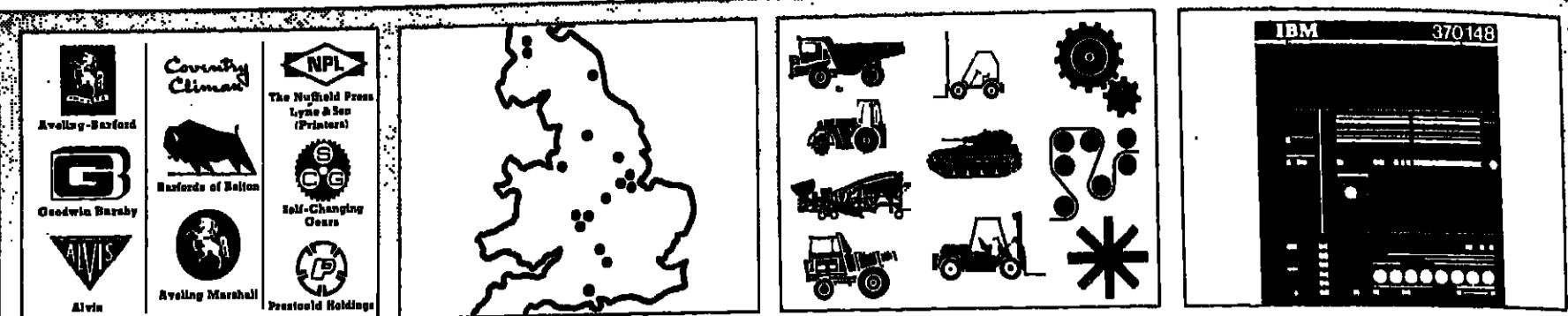
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Sales up 33%
Predicted financial results for 1978 justify our self-pride... sales are expected to increase to £203m, profits 43% to £1.8m and employment by 6% to about 13,200. Capital spending is already up with

the computer function as a priority area... new personnel, a new IBM 148 arriving in November and new systems to meet rapidly changing Group needs. That's where you come in.

Group Systems Development Planning Manager
To create a System Plan which allows for both Group and Plant policies, objectives, priorities and systems plans.

Aged around 30 years, ideally a graduate, you will have a broad technical background in computing plus at least 7 years' experience in data processing.

UNIVERSITY OF ST. ANDREWS Computing Laboratory

Applications invited for the established post of COMPUTING OFFICER

In the User Services group of the Laboratory, an experienced appointed will participate in all the activities of the group which include applications programming, system development, documentation, user-oriented documentation and giving advice on the use of the various computing facilities.

Locally available batch and time-sharing facilities are available in the laboratory (IBM 360/44). External facilities include an IBM 370/165 accessed via an RJE terminal.

Applicants should possess an honours degree, an equivalent qualification or a demonstrable aptitude for programming if necessary. Appointment will be on the incremental scale (£333-£697 initial placement according to experience) with prospects of promotion to higher scales.

Further particulars can be obtained from the Establishment Officer, The University College Gate, St Andrews, Fife, KY15 4JL, enclosing a self-addressed envelope and the names of three referees should be lodged by Monday, 26th September, 1977.

SAUDIA, flag carrier of the Kingdom of Saudi Arabia is seeking as part of a planned programme of expansion men aged between 25-45 to fill the following vacancies in its Data Services Department.

**SENIOR SYSTEMS ANALYST
Starting Salary c. £10,700 Tax Free**

The successful candidate will be required to analyse and present systems for improvement of the product. He will organise and direct project responsibility for Systems Analysis, co-ordinate the implementation of systems, prepare system flow charts and design logical requirements and systems control for programming. Applicants should hold a college degree or equivalent and have at least 6 years' data processing experience, two of which should have included systems analysis design. A knowledge of COBOL, IMS and basic IBM 360/370 OS/VS-1 operating systems would be preferred.

Ref. SSA/CW

**SYSTEMS ANALYST
Starting Salary c. £10,000 Tax Free**

Duties will include the design of system improvements and programme control; the analysis of documents, files and reports related to workflow and the developmental characteristics and preparation of system flow chart. Applicants should be educated to 'A' level standard with a diploma in Computer Studies preferred. At least 4 years' experience in data processing is essential and a knowledge of COBOL, IMS and basic IBM 360/370 OS/VS-1 operating systems would be an advantage.

Ref. SA/CW

**SENIOR PROGRAMMER
Starting Salary c. £10,900 Tax Free**

There will be a requirement to develop programming costs and prepare project schedules; to design logic for individual programmes and programme systems, to code programme instructions and prepare test data. Applicants should have at least 4 years' programming experience and they should be educated to G.C.E. 'A' level standard. A diploma in Computer Studies would be preferred and a knowledge of COBOL, IMS and basic IBM 360/370 OS/VS-1 would be an advantage.

Ref. SP/CW

**PROGRAMMER
Starting Salary c. £9,300 Tax Free**

The duties of the programmer will comprise the analysis of programme performance, the design of conversion procedures, programme logic and the organisation of data control procedures.

Applicants should be educated to G.C.E. 'A' level standard and have at least two years' experience as a programmer. Programming language is COBOL but PL/I and BAL would be desirable.

Ref. P/CW

These posts based in Jeddah are offered on a two-year renewable contract together with unfurnished accommodation, free and reduced rate air tickets for you and your family, 40 calendar days vacation per annum plus relocation allowance.

Please write with full personal and career details quoting the job title and appropriate reference number to:

Area Personnel Manager - Europe,
Saudi Arabian Airlines,
93 Regent Street,
London, W.1.

Closing date, 22nd September, 1977

Saudia
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Where the prospects are brighter

COVENTRY

Our client, a major group in the Engineering Industry, are seeking the following staff to augment their existing team:
2 SENIOR SYSTEMS ANALYSTS. c£8,000 per annum. At least four years' plus financial or Manufacturing systems. Good knowledge of On-Line systems. Experience on IBM or UNIVAC Hardware.

SYSTEMS ANALYST. To £4.5K. At least 2 yrs. experience. Would consider programmer who has spent a good proportion of time on Systems Design or Analysis work.

ON-LINE TERMINAL PROGRAMMER. c£4,500. 2 yrs. plus Assembler. Good knowledge of On-Line applications.

PROGRAMMER. c£4,000. At least 2 yrs. + Cobol or Cobol and Assembler. Although this company is situated in Coventry, it is easily accessible to the motorway with low cost housing nearby. Full relocation expenses paid to successful applicant.

MANAGEMENT/SYSTEMS

SYSTEMS AND PROGRAMMING MANAGER. 7 yrs. + experience in ICL 1900 Hardware, including On-Line and Real Time systems. Area: East Midlands. Salary c£6.5K.

CONSULTANT ANALYST/PROGRAMMERS. Required by a leading Software house. 5 yrs. + in Programming and Systems. Area: Midlands. Salary c£6.5K.

CONSULTANT PROGRAMMER/ANALYST. For Time Sharing Bureau. Applicant should have a degree plus a working knowledge of APL. Car supplied. Area: Midlands or London. Salary £3 1/2-£5 1/2K.

COMPUTER MANAGER. Conversant with ICL 2903 or IBM Systems 3. 5 yrs. + Systems and Programming Language RPG 2. Area: West Midlands. Salary c£5.5K.

CUSTOMER SUPPORT ADVISER. 5 yrs. + experience in Production / Engineering Systems. Area: Staffs. Salary c£4 1/2K.

SENIOR SYSTEMS ANALYST. 4 yrs. + experience. Cobol background. Area: Wiltshire. Salary c£5K.

SYSTEMS ANALYST. 2 yrs. + experience with Cobol background. Area: Leicestershire. Salary c£4.8K.

IMPORTANT REMINDER

Make sure you don't miss our issue of September 22nd, which will highlight the opportunities currently available in Wales and the West Country. To advertise in this important feature contact:

Alan Escott on 021-356 4836
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Mark Williams on 01-261 8019

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Languages: COBOL, PL/I, FORTRAN, BASIC or Assembler level.

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ANALYST/PROGRAMMER. 3 yrs. + experience in Analysis and Programming in Cobol. Area: Staff. Salary to £4.5K.

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RPG PROGRAMMERS/ANALYST PROGRAMMERS for pre- and post-sales support work. Area: Midlands. Salary to £5K plus expenses.

PROGRAMMERS. Senior Cobol Programmers required by mainframe manufacturer for pre- and post-sales support work. Applicants must have a good knowledge of commercial applications and able to communicate at all levels. Salary of c£5K + expenses.

PL/I or ASSEMBLER PROGRAMMER. 2 yrs. + experience, conversion courses available if you have a working experience in another language. Area: Grantham. Salary to £4.4K.

PROGRAMMER. 1 year + experience Cobol. Area: Stoke-on-Trent. Salary c£3.5K.

PROGRAMMER. 2 yrs. + experience Cobol. Area: Burton-on-Trent. Salary to £4K.

WE HAVE A FURTHER 100 PROGRAMMING POSITIONS THROUGHOUT THE MIDLANDS AND WEST COUNTRY. WHY NOT TELEPHONE US WITH YOUR JOB REQUIREMENTS?

OPERATIONS

OPERATIONS SUPERVISOR. Must be conversant with IBM Systems 3 or 3776 terminals, 3741 diskett encoding machines, also supervision of data prep. Area: East Midlands. Salary c£4K.

ICL 1900 GEORGE 2. 1 year + experience Areas: Birmingham South, Warwickshire, Leicester and Nottingham. Salary £3K-£4K.

IBM 370 OS or DOS. Areas: Birmingham or Northampton. Salary £3K-£4K.

Most of our clients assist with relocation expenses.

We have many more Computer Positions on our register at all levels. Our service is entirely free to applicants.

CREDIT LYONNAIS

a leading French Bank, long established in London, has recently installed a 256K IBM 370/125/2 which is currently being used on batch systems and to which the Bank's 16 existing terminals will shortly be connected for on-line applications.

Two additional staff are required to work on a 2-shift, 5-day week system. Salaries are inclusive of shift allowances and there are attractive fringe benefits, including LV's and an annual bonus.

2 COMPUTER OPERATORS

with at least 1 year's experience including 370 operation under DOS and, preferably, VS. A starting salary of around £3250 per annum is envisaged.

Applicants should have a mature and responsible attitude to their jobs and be able to work well in a small team.

Please apply in writing to:

Mr. H. Young, Personnel Manager
Crédit Lyonnais, P.O. Box 81
84-94 Queen Victoria Street, London EC4P 4LX

SCHOOL EXAMINATIONS DEPARTMENT — UNIVERSITY OF LONDON

PROGRAMMER — up to £5,261 inclusive

Applications are invited from programmers with at least 18 months' experience in PLAN and preferably with a working knowledge of COBOL to join a team of programmers responsible for the processing of the University's GCE Examinations in the United Kingdom and overseas. An ICL 19031 computer is used and processes information stored both on disc and magnetic tape files. Applicants should be familiar with GEORGE operating system.

Salary scale: £3,004-£4,811 plus £4.00 London Allowance per annum. Six weeks annual leave plus official Bank Holidays and one public holiday. Membership of the University's Superannuation Scheme, interest-free pension plan.

Application form, which should be returned by Friday, 23 September, is available with further particulars from Mr. Alan King, Higher Personnel Officer, University of London Examinations Department, 66-72 Queen Square, London WC1R 4BS. Tel: 01-323 2111 ext. 2430.

01-405 9964



BOOKS

Computer science for programmers

The Theory of Computer Science (A Programming Approach) by J. M. Brady. 287 pp. £8.00 (£4.50 paperback). Chapman and Hall.

THIS book aims at introducing the main features of theoretical computer science without too much mathematical detail. It is divided into two parts.

Part One deals with the meta-theory, by which is meant results about computer science. Two models for computable functions are taken: Kleene's recursive functions (GRFs) defined via schemes and Turing computable functions defined via Turing machines. These classes are shown to be co-extensive by compiling GRFs into Turing programs (thinking of this as the machine language) and conversely simulating Turing machines using GRFs.

Several undecidable problems are given (of course including the halting problem). The section on formal languages contains

some errors. Throughout Part One, the author tries to give as much motivation as possible (in contrast with many more mathematical texts).

The style is easy to read, but the persistent use of "checkpoint" I found somewhat irritating. The choice of BCPL for writing many of the programs seemed a bit odd, especially as it was then necessary to add an appendix on the language.

The results in this book should be known by the average programmer. Witness the remark of the author when discussing the halting problem, "I am aware of a computer manufacturer who, in the past decade, attempted to build such a program!" The fact that there is not too much mathematics (together with the reasonable paperback price of £4.50) might make it attractive to them.

PHIL GRANT

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Reliability of programs is next considered. This is a good brief account of program proving, based mainly on Floyd, Hoare and Mano's work. The final chapter is on the meaning of

fully described. The book includes useful surveys of implemented protection systems.

The book does seem to have suffered some degree of time-lag in preparation. The copious references, for example, are limited to the period 1949-1974. Much has happened to security techniques in the past few years — access cards, for instance, have become highly sophisticated. Privacy has become a burning topic — it is hardly mentioned in the book. Personnel and insurance fare little better, both limited to brief paragraphs.

This publication ignores the evaluation exercise, concentrating more on physical safeguarding of computer systems. Particularly thorough is the emphasis on security software systems and terminals. Program and operating protection methods are

The various exercises show considerable imagination and allow the student ample scope for independent investigation.

It is a tradition in textbooks that the larger part of the book outlines detail at the lowest level; uses programming illustrations for the simplest possible problems; and then concludes with brief descriptions in outline of the most complex systems which have yet been devised, without any indication of the manner of solving the problems involved. This book is no exception. The few paragraphs on analytical methods reveal a simplicity of approach that would overlook many of the practical difficulties.

A useful guide for the business student, but not much help to the data processing practitioner.

FOCUS

short on precautionary advice on this front. The book does include, however, such everyday hazards as the overhot electric light bulb which caused the complete destruction of a Pentagon data centre.

Computer security books, as a rule, arrive in two categories. There is the down-to-earth, practical variety, which concentrates on shutting and bolting the installation security door before it is too late. The other is the type which concentrates on methods of evaluating risk — when it could well be too late.

This publication ignores the evaluation exercise, concentrating more on physical safeguarding of computer systems. Particularly thorough is the emphasis on security software systems and terminals. Program and operating protection methods are

The book fails to meet the needs of the everyday DP manager, it could well benefit the programmer, reference librarian and systems analyst.

THE VIEWPOINT IS ALMOST ENTIRELY AMERICAN, WITH NO MENTION OF EXPORTS. THERE ARE PLENTY OF REFERENCES THROUGHOUT THE BOOK, BUT THE INDEX IS PERFUNCTORY. EACH SECTION ENDS WITH A SET OF QUESTIONS FOR DISCUSSION.

A 10% SAMPLE INDICATES THE SCOPE OF THE WORK.

DO CHARISMATIC EMPLOYEES INDICATE EVENTUAL TROUBLE FOR A FIRM?

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FOR ANSWERS TO THESE AND MANY MORE, READ THE BOOK. NOT THAT READY-MADE ANSWERS ARE PROVIDED, BUT A BASIS FOR FORMULATING VIEWS IS THERE.

Useful guide for the business student

Breaking down jargon barrier

Science Fact, edited by Prof Frank George. 540pp. £1.50. Topaz Books, Gt Missenden, Bucks.

the heading "Computers and Artificial Intelligence".

Here we meet the Ultra Intelligent Machine (UIM) as first described by Professor I. J. Good, the mathematician and philosopher (Roy Steenman); defence and weapon research and development (Dennis Archer); astronomy and space science (Peter Beer); transport and communication (Arthur Garrett); the living sea (Carolyn Roberts); energy (Arthur Conway); food resources and population and raw material resources and conservation (Robert Waller).

As can be seen, Science Fact takes a big bite out of science and technology, and there is some overlap of subjects, but Professor George has added a further chapter of some importance, making this a thought-provoking work. Thought provoking enough for the publishers to announce in a postscript that it is to be followed up by another book called "Life Survival".

This will take the logical conclusions of Science Fact and present them to eminent individuals in religious, scientific, political and economic circles.

ROBIN WEBSTER

Product planning

Product Planning, 2nd edition, edited by A. Edward Petricol. 412 pp. £8.25. Petricol/Charter, a valuable in the UK from Input Two Nine Ltd.

THIS book is a collection of 40 articles from 18 publications: just over half the articles are from the Journal of Marketing, Business Topics and Research Management. Most date from 1975.

The skilful selection covers major aspects, in moderate depth with little overlap. The orientation is mainly toward consumer products, but enough is said of industrial products to make this useful reading for product planners and senior managers in the computer industry. Increasingly some of us will be concerned with computers in consumer

goods.

The viewpoint is almost entirely American, with no mention of exports. There are plenty of references throughout the book, but the index is perfunctory. Each section ends with a set of questions for discussion.

A 10% sample indicates the scope of the work.

DO CHARISMATIC EMPLOYEES INDICATE EVENTUAL TROUBLE FOR A FIRM?

WHY IS INNOVATION NECESSARY FOR FIRMS? DO WE HAVE TOO MUCH MATERIAL WEALTH?

DO YOU BELIEVE THAT SOME BUSINESS ORGANISATIONS ABIDE BY A CODE OF ETHICS? CAN YOU NAME ANY?

DISCUSS PLANNED OBSOLESCENCE, ITS PROS AND CONS.

HOW DO YOU FEEL ABOUT THE FEDERAL GOVERNMENT'S ROLE AS SELLER OF PRODUCT SERVICES?

FOR ANSWERS TO THESE AND MANY MORE, READ THE BOOK. NOT THAT READY-MADE ANSWERS ARE PROVIDED, BUT A BASIS FOR FORMULATING VIEWS IS THERE.

ALAN SUTCLIFFE

Microcomputer engineering

Microcomputer-based design, by John B. Peatman. 540 pp. £15.75. McGraw-Hill.

THE ASPIRING MICROPROCESSOR ENGINEER MUST AT SOME TIME OR OTHER NEED AN INSTANT REFERENCE BOOK COVERING MOST ASPECTS OF MPC DESIGN, FROM CHIP LEVEL TO SYSTEM DESIGN, WHEN ONE ISN'T AVAILABLE.

THE WORK IS IN SEVEN SECTIONS: THE ROLE OF THE MICROPROCESSOR; REGISTERS AND DATA MANIPULATION; MICROCOMPUTER HARDWARE; MEMORY; INPUT/OUTPUT; HARDWARE AND SOFTWARE DEVELOPMENT; ALGORITHMIC PROCESSES.

THE COMPLETENESS HERE DOES NOT BY FAR APPROXIMATE THE LENGTH OF THE WORK, THE BOOK WILL ALSO APPEAL TO THOSE CONNECTED WITH THE MANUFACTURING OR SELLING OF MPC HARDWARE.

BY THE TIME ANY BOOK ON MPC IS WRITTEN AND PUBLISHED, IT HAS ALREADY BECOME DATED AND A GOOD FEATURE OF THE BOOK IS THAT INFORMATION ON SPECIFIC MPC SYSTEMS IS